

6.8 Regeneration and Revegetation

6.8.1 Introduction

Site rehabilitation works will be completed by a suitably qualified bush regeneration company in accordance with the specifications contained in following sections. These specifications provide details of the proposed rehabilitation phases, site preparation, weed control, natural regeneration and revegetation works (including plant species lists). Performance indicators and targets for the proposed rehabilitation strategy to be achieved during the ‘establishment period’ and ‘maintenance period’ of the project (as defined within the Project approval MP08_0194) are contained in **SECTION 8.6**, along with corrective actions that are to be implemented if performance targets are not met.

6.8.2 Rehabilitation Area Selection

Assisted natural regeneration and revegetation works to be completed within Precincts 12 - 14 EMAs will, generally, occur within:

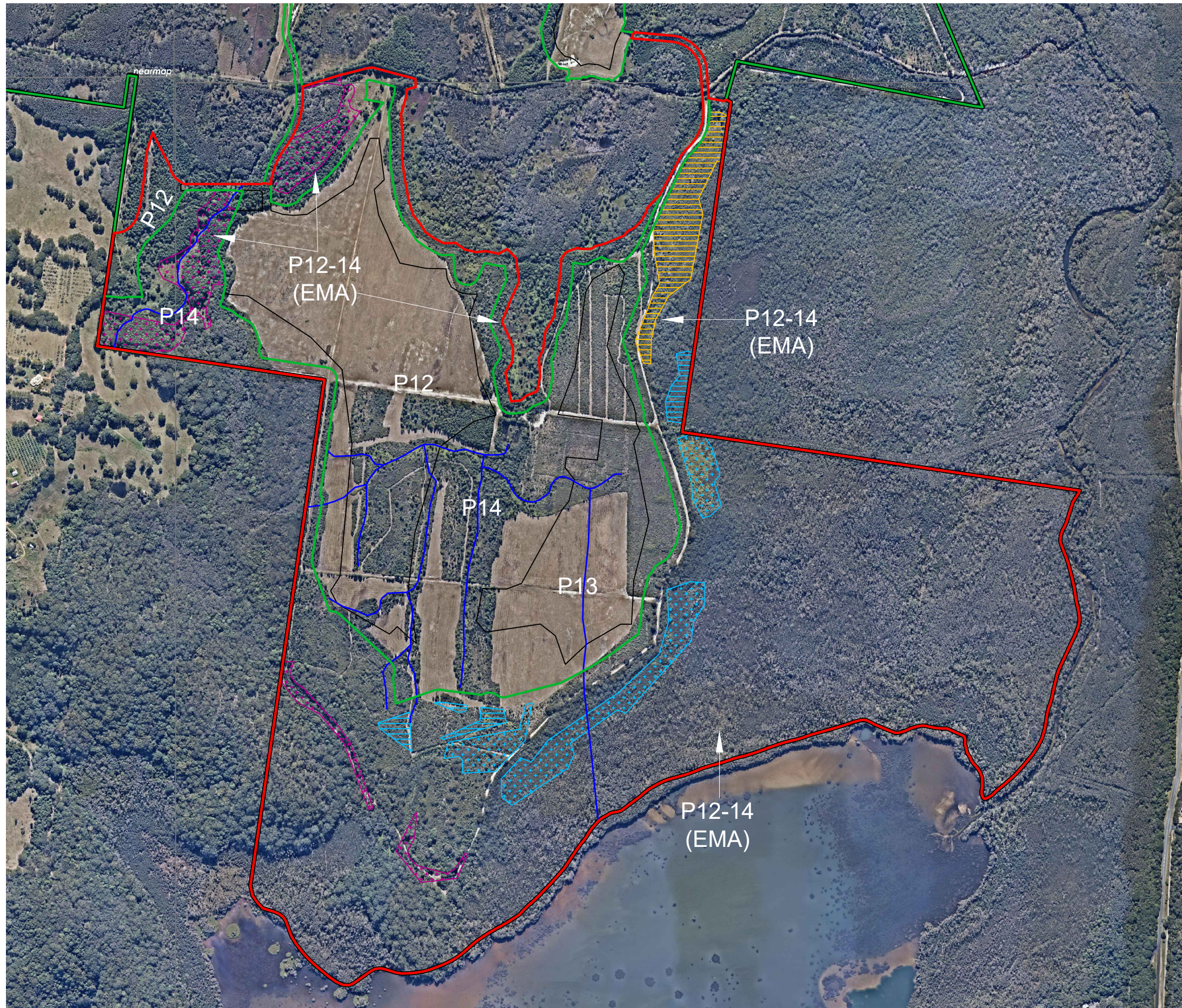
- Management Zone 4 - Creation of compensatory Koala habitat in accordance with Section 7.6 of the Kings Forest KPoM (JWA 2019);
- Management Zone 5 - Creation of compensatory WSF habitat in accordance with Section 7.8 of the Kings Forest WSFMP (JWA 2020a); and
- Management Zone 6 - Regeneration of heath communities.

The methodology utilised in the selection rehabilitation areas and types within each management zone involved a tiered or “top-down” approach. A summary of each major step in the process is described in **APPENDIX 5**. The resulting areas requiring rehabilitation as part of this VWMP are identified in **FIGURE 11** and summarised in **TABLE 4**.

TABLE 4
REHABILITATION AREAS

Management Zone	Rehabilitation Area	PCT	TVMS	Size (ha)
Zone 4	Koala compensatory habitat	Refer to the Kings Forest KPoM (JWA 2019)		
Zone 5	WSF compensatory habitat	Refer to the Kings Forest WSFMP (JWA 2020a)		
Zone 6	Dry Heath Regeneration Areas	663	501	4.15 ha
	Wet Heath Regeneration Areas	1297	502	1.62 ha
TOTAL				5.77 ha

The assisted natural regeneration of retained vegetation (see **SECTION 6.6**) and heath communities is the focus of this VWMP. Compensatory koala and WSF habitat creation is to be completed in accordance with the Kings Forest KPoM (JWA 2019) and WSFMP (JWA 2020a) respectively.



LEGEND

- Area Subject to this Management Plan
- Environmental Management Area (EMA) Boundary (#)
- Precinct Boundary
- Kings Forest Boundary
- Drainage Lines

REHABILITATION AREAS SUBJECT TO THIS VWMP

- Heath regeneration areas - Dry heath
- Heath regeneration areas - Wet heath

REHABILITATION AREAS SUBJECT TO OTHER MANAGEMENT PLANS

- Koala compensatory habitat (refer to JWA KPOM 2019)
- WSF compensatory habitat (refer to JWA WSFMP 2020)

Note:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).

0 300m
1 : 10 000

SOURCE: JWA Site Investigations 2018,
Near Map 08/08/18 Aerial

SCALE: 1 : 10 000 @ A3

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PROJECT
Vegetation & Weed Management Plan
Precincts 12 - 14 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 11

PREPARED: BW
DATE: 17 November 2020
FILE: N97017_MP12-14_20201116.dwg

TITLE
REHABILITATION
AREAS

6.8.3 Rehabilitation Phases

Site rehabilitation works (i.e. assisted natural regeneration and revegetation) will be completed by a suitably qualified¹ bush regeneration company and be undertaken in six (6) phases as follows:

- **Phase 1:** Site preparation of revegetation areas and retained vegetation areas (where necessary).
- **Phase 2:** Initial planting (where necessary) - will commence as soon as the bush regeneration team is satisfied that weed species have been successfully controlled.
- **Phase 3:** Establishment of revegetation sites and initial maintenance of assisted regeneration sites - it is planned that the establishment period will be of a minimum length of twelve (12) months during which time weeds will be controlled and watering will be undertaken on an 'as needs' basis.
- **Phase 4:** Supplementary planting to replace dead seedlings - will commence within two (2) months of the initial planting in each area. Replacement of seedlings/saplings that have died will continue during the approved monitoring period at a rate that will ensure a >90% survival of planted stock.
- **Phase 5:** Additional plantings - works can commence where advanced canopy growth is evident and the bush regeneration team determines that additional planting is necessary to satisfy the objectives of the offset strategy.
- **Phase 6:** Ongoing maintenance - will continue indefinitely on an as needed basis until performance targets have been met. If the performance targets have not been met, corrective actions will be implemented in accordance with **SECTION 8.6.5** of the VWMP.

6.8.4 Site Preparation

Site preparation will include the following actions:

- Erection of protective fencing and signage (as appropriate).
- Identification of retained vegetation and rehabilitation area - each retained vegetation area and rehabilitation area has been assigned an identifier which will be used to identify relevant rehabilitation areas on the ground and for monitoring and maintenance purposes (refer **SECTION 7**). Each different area will be separated by flat (5 cm x 2.5 cm) pegs painted in white at the top with the allocated identifying area number written on the white paint faced towards the relevant area.
- Primary and secondary weed control in accordance with **SECTION 6.7.4**.
- Planting works in accordance with the following sections.

6.8.5 Assisted Natural Regeneration

Natural regeneration refers to the natural process by which plants replace or re-establish themselves. Natural regeneration can be described as the “regrowth” or “vegetative recovery”

¹ A Bush Regeneration Company that has demonstrable experience in the rehabilitation or revegetation of native vegetation communities in the Tweed region.

which occurs spontaneously, by seed or otherwise, after a stress or disturbance (Temple & Bungey 1980). As long as mature and healthy native plants occur on the subject site, natural regeneration is an option.

Natural regeneration is a powerful tool that can be used to re-establish native vegetation. It ensures that the new growth is derived from genetic material (i.e. parents) that currently occupies the site and as such is adapted to local conditions. Additionally, the chance of outbreeding depression is reduced.

Natural regeneration will be encouraged within all retained vegetation (i.e. Management Zones 2 and 3) and rehabilitation areas (i.e. Management Zone 6). Natural recruitment will be monitored for the life of the rehabilitation project. Where natural recruitment is determined to be not currently occurring within retained vegetation and rehabilitation areas (e.g. areas devoid of native vegetation after weed control works), active revegetation through planting will be completed. Revegetation methods (if necessary) will follow those outlined below.

6.8.6 Revegetation Works

6.8.6.1 Introduction

Revegetation will commence no later than six (6) months after the primary weeding is completed. Successful completion of primary weeding will be determined by the appointed bush regeneration team. At this time, an assessment will be made as to level of natural regeneration present within retained vegetation and rehabilitation areas. Any areas where the native seedling germination is considered to be low and impeding the achievement of rehabilitation objectives will require revegetation.

6.8.6.2 Sourcing Plants

Plants to be used for revegetation are to be either propagated in a nursery using material (seeds, cuttings, tissues, etc.) from species which occur onsite or obtained from a local nursery able to supply stock from local provenance. Where existing nursery stock from local provenance is not available, collection of propagation material should be carried out as detailed below.

Whenever possible, seed will be removed directly from plants by shaking or cutting branches over a tarpaulin. Secateurs will be sterilised between each use. Seed will be placed in small envelopes with the collection details clearly marked. If the seed is extremely small, it will be stored in glass or plastic vials to avoid undue loss. The seed will be cleaned, its viability checked and prepared for storage. Seed that has lost viability will not be used in the revegetation works due to the dangers of genetic aberration.

The following details will be collected from each source plant:

- Location (GPS position);
- Date of collection;
- Name of collector;
- Soil type;
- Health of plant; and

- Collection method.

The amount of seed collected will not exceed 5% per plant. It is expected that during the seed collection program, a site will be visited on several occasions to ensure optimum seed ripeness. The seed collection program will be prepared by the bushland restoration team in consultation with TSC and NSW NPWS prior to commencement. If seed collection proves difficult or impossible, other forms of propagation, such as cuttings, may be attempted.

6.8.6.3 Planting Program

Tube stock seedlings will primarily be used for the plant-out. Seedlings will be sufficiently developed so as to have a significant chance of survival. Plants will be at least the sixth leaf stage and/or 20 cm in height. Tube stock will be sun hardened (plants should be held in full sunlight and systematically stressed to the point of wilting for at least two months prior to planting).

All exclusionary fencing (where applicable) will be in place prior to the commencement of construction and before planting occurs.

Planting will occur at the optimum time of year when there is high soil moisture (between January and May), unless irrigation is available and accessible.

If required, the restoration team may make minor alterations to this revegetation strategy depending on the site requirements. The following strategy will be employed:

- Secondary weeding - Planting sites will be spot sprayed with a frog friendly glyphosate product 3 - 4 weeks prior to commencement;
- All seedlings will be soaked in water overnight prior to planting;
- All seedlings will be provided with a wetting agent such as rain-saver² crystals where appropriate;
- Weeds will be controlled, in the short term, through the application of suitable mulch around individual plantings and with spot applications of an appropriate herbicide.
- All seedlings will be protected by a tree guard (commercial tubing or equivalent) or fencing if browsing becomes an issue; and
- Watering will be undertaken after the seedlings have been planted on an 'as needed' basis.

The seedlings shall be planted on the same day (or as soon as practicable) as their transport from the nursery. No seedlings will be left unprotected on the site whilst awaiting planting. Planted seedlings will be marked with a piece of biodegradable tape and staked.

The plants growing medium should be soaked prior to planting and the plant cores should be buried to approximately 1-2 cm deep. Only nitrogenous fertilisers will be used to avoid the

² Rain-saver is a polymer water crystal that has been specifically developed for plants. The polymer absorbs and holds water and nutrients at a specific tension which makes it available to plant roots but does not release to the soil. Rain-saver has proven very successful in more difficult environments (e.g. Roadside plantings on the Pacific Motorway between Brisbane and the Gold Coast and in frontal dunes at Pottsville (R. Keene *pers comm.* 2000).

introduction of Phosphorous, Potassium and other micronutrients. Planting in areas exposed to full sun or westerly sun will be avoided in the peak summer months, where possible.

6.8.6.4 Planting Density and Species Selection

A list of species to be used for planting within the proposed rehabilitation areas is provided in **TABLE 5**.

The following plant spacings will be adopted:

- Small trees/shrubs = 2-3 m centres; and
- Groundcovers (where necessary) = 1.5 m centres.

TABLE 5
PLANTING DETAILS

Management Zone	Management Intent	Area	PCT/TVMS to be recreated	Trees, shrubs, or groundcover plant species to be planted
Zone 4 - Koala Compensatory Habitat	Assisted regeneration/ revegetation	7.74 ha	Refer to Section 7.6 of the Kings Forest KPoM (JWA 2019)	
Zone 5 - Wallum Sedge Frog Compensatory Habitat	Assisted regeneration/ revegetation	6.77 ha	Refer to Section 7.8 of the Kings Forest WSFMP (JWA 2020a)	
Zone 6 - Heath Regeneration	Dry Heath Assisted regeneration (infill planting if necessary)	4.15 ha	PCT 663 TVMS 501	Trees - n/a
				Small trees/Shrubs - <i>Allocasuarina littoralis</i> ; <i>Banksia aemula</i> ; <i>Boronia pinnata</i> ; <i>Calytrix tetragona</i> ; <i>Dillwynia retorta</i> ; <i>Leptospermum semibaccatum</i> ; <i>Leptospermum trinervium</i> ; <i>Melaleuca nodosa</i> ; <i>Monotoca scoparia</i> ; <i>Philotheca salsolifolia</i> ; <i>Phyllota phyllicoides</i> ; <i>Xanthorrhoea glauca</i> ; <i>Xanthorrhoea spp.</i> ; <i>Leptospermum polygalifolium</i> .
				Ground - <i>Caustis recurvata</i> ; <i>Coleocarya gracilis</i> ; <i>Platysace lanceolata</i> ; <i>Pteridium esculentum</i>
	Wet Heath Assisted regeneration (infill planting if necessary)	1.62 ha	PCT 1297 TVMS 502	Trees - n/a
				Small trees/Shrubs - <i>Baeckea frutescens</i> , <i>Baeckea linifolia</i> , <i>Banksia ericifolia</i> , <i>Banksia oblongifolia</i> , <i>Banksia robur</i> , <i>Leptospermum juniperinum</i> , <i>Leptospermum liversidgei</i> , <i>Melaleuca nodosa</i> , <i>Sporadanthus interruptus</i> , <i>Xanthorrhoea fulva</i>
				Ground - <i>Eurychorda complanata</i> , <i>Pteridium esculentum</i> , <i>Sprengelia sprengelioides</i>
TOTAL		20.28 ha		

6.9 Transfer of Land to Public Ownership

In accordance with Section 7.10 of the Kings Forest KPOM (JWA 2019) a minimum of 150 ha of the Kings Forest site, contiguous with Cudgen Nature Reserve, is to be transferred to public ownership (in accordance with Concept Plan condition C3). Portions of Precincts 12 - 14 EMAs are included within this 150 ha area (**FIGURE 12**). These areas will be protected by Nature Reserve zoning in perpetuity. The remaining EMA's across the site may also be transferred to public ownership, subject to agreement with TSC. These areas are known as Potential Council Land (PCL).

In accordance with Condition 3 of the Major Project Application 08_0194, Project 28 will submit to the Secretary a form of dealing(s) which will be registered on the title to the future BCD land and PCL. This registration will bind all future landowners to manage the dedicated land for conservation purposes (and to prevent any future development activities), ensure compliance with relevant management plans (in particular the KPOM), permit access by the Department, Council and BCD at all times and provide a release for any public authority from the registered dealing(s).

Prior to the commencement of works in a precinct, a registered surveyor will prepare survey plans and permanently mark the boundaries of the future BCD land and the PCL. These plans will be lodged with the Department on a precinct-by-precinct basis.

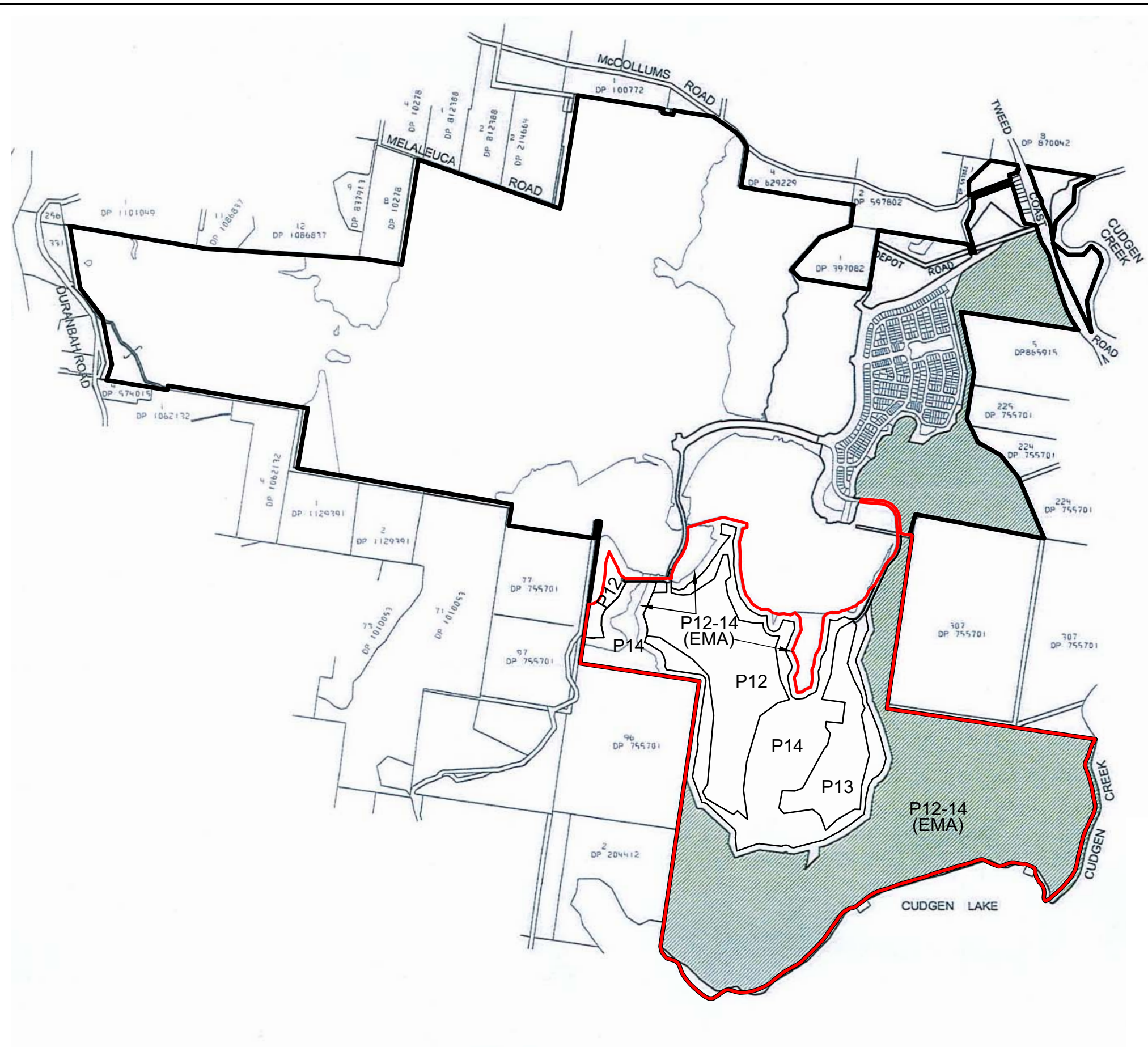
In accordance the Kings Forest KPOM (JWA 2019), the proponent will engage a suitably qualified independent environmental consultant, reviewed by TSC and approved by the Secretary to complete an environmental audit for each part of the Potential Council Land (PCL). The Audit will monitor the effectiveness of the environmental works (repair, enhancement and/or maintenance) and will aim to confirm that the establishment period and any relevant maintenance period criteria have been met. Details for the requirements of the environmental audits is provided in Section 8.6.3 of the Kings Forest KPOM (JWA 2019).

In accordance with Condition A13 of MP08_0194 (as modified), the proponent will be responsible for the management of all future BCD land and PCL until such time as an agreement is reached regarding the dedication of the land. The Proponent's intention is to dedicate these lands on a precinct by precinct basis, with all lands proposed to be dedicated prior to 2035. The maintenance of land dedicated with each relevant precinct will become the responsibility of the new landowner at the time of dedication.

6.10 Fire Management

The proponent will be responsible for bushfire management in the conserved bushland and wetland areas of the site, until ownership is transferred. In accordance with Section 7.11 of the Kings Forest KPOM (JWA 2019), Project 28 has engaged with BCD, Council and the Rural Fire Service to amend the Bushfire Management Plan (BushfireSafe 2020), which included preparation of the associated Kings Forest Koala Fire Management Plan (Wildsite 2020), so as to ensure that a co-operative effort to minimise the potential for wildfires and fire frequencies occurs.

Bushfire management actions for the Kings Forest site are detailed in the Kings Forest Stage 1 Bushfire Management Plan (BushfireSafe 2020). The Bushfire Management Plan outlines risk



- LEGEND**
- Area Subject to this Management Plan
 - Kings Forest Boundary
 - INDICATIVE AREAS TO BE DEDICATED TO NPWS
 - Conservation offset (Nature Reserve addition) land approx total area 180 ha (150 ha per concept plan condition C3, additional 30 ha subject to agreement with NPWS)

NSW GOVERNMENT
Planning

Issued under the Environmental Planning and Assessment Act 1979

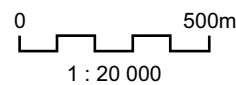
Approved Application No. 08-0194

granted on the 11/8/13

Signed [Signature]

Sheet No. 38 of 41

Note: Final boundaries are subject to agreement with Dept of Planning and Infrastructure



SOURCE: Landsurv (Ref: Landsurv Revision C.pdf dated 23.08.12)
SCALE: 1 : 20 000 @ A3

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CLIENT
Project 28 Pty Ltd
PROJECT
Vegetation & Weed Management Plan
Precincts 12 - 14 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 12

PREPARED: BW
DATE: 16 November 2020
FILE: N97017_Landsurv NPWS ded.cdr

TITLE
**PROPOSED
AREAS TO BE
DEDICATED TO NPWS**

management strategies that aim to protect property and life and to reduce the threat to ecological and environmental assets. A fundamental strategy of the Bushfire Management Plan is to assess and manage fuel loads within the Kings Forest site. The Bushfire Management Plan (BushfireSafe 2020) also incorporates the Kings Forest Koala Fire Management Plan (Wildsite 2020) which details fire management strategies for koala habitat areas on the Kings Forest site. The aim of this plan is to protect and conserve the population and habitat of koalas and other associated biodiversity values in the Kings Forest area through the restoration and maintenance of appropriate fire regimes.

It has previously been noted (**SECTION 4.2**) that continued infestation of native vegetation with Slash pine wildings is occurring over the Kings Forest site. As well as decreasing the diversity and competing with native species, pine invasions can also lead to altered fire regimes. There is often a complete absence of fire where pine plantations occur due to the need to maintain the plantation as an economic resource. However, when fires do occur, they are of high intensity due to the highly flammable nature of pine trees and accumulated leaf litter (Skull 1995, 1998). The control of Slash pine wildings at the Kings Forest site is therefore a key consideration for the control of any future wildfires.

Adjacent to Kings Forest, the particular area of concern in terms of bushfire threat is the Cudgen Nature Reserve, including the lands currently forming part of the Kings Forest site to be added to the Reserve. The Cudgen Nature Reserve Fire Management Plan should be amended to include these additional areas prior to these areas being transferred to BCD.

6.11 Bond for Environmental Restoration and Maintenance Works

In accordance with the Major Project Approval (08-0184) Conditions 45A(8) and 50, environmental restoration and maintenance works within the EMAs are subject to a bond. See Section 7.6.7 of the Kings Forest KPOM (JWA 2019) for further explanation.

6.12 Environmental and Community Liaison Officer(s)

In accordance with the requirements of the Kings Forest KPOM (JWA 2019), the proponent must engage a Community Liaison Officer and an appropriately qualified Environmental Officer(s) for the duration of works. The Community Liaison Officer is required to consult with potentially affected property owners and the department before and during construction works and shall respond to complaints of an environmental impact nature. The Environmental Officer(s) shall oversee environmental compliance until all conditions have been satisfied. The roles of Community Liaison Officer and Environmental Officer may be undertaken by the same person.

Further details of the requirements for environmental and Community Liaison Officer(s) are provided in Section 7.13.3 of the Kings Forest KPOM (JWA 2019).

6.13 Adaptive Management

6.13.1 Introduction

Adaptive management is an approach that involves continually monitoring a process to evaluate its effectiveness, and improving the process based on this evaluation. It requires transparent

planning systems and implementation strategies, and a strong emphasis on monitoring and reviewing to ensure emerging information is reflected in future planning. The principles of adaptive management have been incorporated into the administration of restoration projects within a variety of governmental authorities and programs (Thom 1997).

The Kings Forest site is a large and complex project with interrelated management plans and conditions and is expected to be carried out over many years. As the project evolves, it has been acknowledged by NSW DPI&E, BCD and TSC that conflicts between management plans may be identified during the management plan approval process. In addition, changes to site conditions and the results of monitoring (i.e. rehabilitation monitoring) may require amendments to the management actions anticipated in this VWMP and other environmental management plans.

The following sections outline the adaptive management approaches to be utilised to manage conflicts between management plans and to respond to issues identified during routine monitoring.

6.13.2 Management Plan Conflicts

Issues related to conflicts between management plans will be addressed using the following adaptive management approach:

1. Issues of concern will be identified as they are detected during the management plan review and approval process.
2. Approved management plans can only be updated using the adaptive management approach where the inconsistency:
 - results following the approval of an associated management plan, and;
 - is in response to advice from, or acknowledged in writing by TSC or a relevant State agency, and
 - is genuinely minor and/or administrative in nature, and
 - results in no additional environmental impact.

Discretion as to whether approved management plans may be updated using the adaptive management approach (or may require re-satisfaction or a modification of the Project Approval) rests with the NSW DPI&E, in consultation with TSC, BCD and any other relevant agencies.

3. The management plan under review will be amended to acknowledge the issue(s) of concern and how the issue(s) will be addressed through the adaptive management provisions. Updates must be consistent with the rationale, aims, objectives and expected outcomes of the relevant management plan (e.g. the principles of the Koala Plan of Management) and continue to comply with the relevant conditions of the Project Approval and any relevant benchmarks. For example, where proposed offset plantings conflict with other uses an alternative offset site will need to be located elsewhere to satisfy the overall offset commitment.

4. Once the plans commence implementation, the recommended adaptive management issues and the relevant management response should be implemented and included in the annual reporting for the affected management plan.
5. When management plans are updated (which is required for each new stage of the development) any changes made to the plan because of adaptive management are to be included in the updated plan and adaptive management log (**SECTION 6.13.4**). A copy of all management plans will be kept on the project website, clearly indicating current and archived versions.

6.13.3 VWMP Adaptive Management

Once the Precincts 12 - 14 VWMP commences implementation, it is possible that routine monitoring will identify issues with the strategies outlined in this report, in particular the health and conditions of the plantings, natural regeneration and the status of the weed infestation. Alteration to the design and maintenance of works may be required to ensure the objectives of the VWMP are achieved and will be addressed through the adaptive management provisions. Adaptive management strategies for this VWMP will be determined by the information provided in monitoring reports. Examples of adaptive management strategies that may be required within this VWMP include:

- Amendment of species list for revegetation works;
- Replacement of enhancement plantings that do not survive; and
- The status of the weed infestation and alteration of weed control methods or timing.

Before the implementation of any adaptive management strategy a brief report is to be provided to Project 28 Pty Ltd and other relevant agencies detailing the proposed management actions and the predicted outcomes. The implementation must be approved by the relevant authority prior to implementation.

When management plans are updated (which is required for each new stage of the development) any changes made to the plan because of adaptive management are to be included in the updated plan and adaptive management log (**SECTION 6.13.4**). A copy of all management plans will be kept on the project website, clearly indicating current and archived versions.

6.13.4 Adaptive Management Log

A log of changes to each management plan will be updated monthly and published on the project website. In addition, a copy of the adaptive management log will be included in the Annual Vegetation Monitoring Report (**SECTION 8.7.2**). The log shall include (as a minimum), the date, the title of the plan affected, an explanation of the inconsistency and update made, and confirmation that TSC, BCD or any relevant agencies support the amendment.

No issues have been identified to date within this Precincts 12 - 14 VWMP during the management plan review. An adaptive management log is provided in **TABLE 6** and will be updated as necessary.

TABLE 6
ADAPTIVE MANAGEMENT LOG

Date	Affected Management Plans	Conflict	Description of Issue	Proposed Adaptive Management Response	Confirmation of TSC, BCD or Any Relevant Agencies Support the Amendment	Success of Adaptive Management Response
No issues identified to date.						

7 PROJECT WORK PLAN

The Kings Forest project will likely proceed over many years. The length of time will be dependent, to a certain degree, on the demand for land over time. The development of the site will be completed on a precinct-by-precinct basis in accordance with approved Precinct Plan. This may be subject change however it is likely that the development of Precincts 12 - 14 will not commence for 10 - 15 years.

Due to the uncertainty of the timing of commencement of construction works within Precincts 12 - 14, it is proposed to undertake pre-commencement monitoring and maintenance works within the Precinct 12 - 14 EMAs to ensure that relevant ecological values of these areas are not compromised. This will consist of baseline monitoring every five (5) years, and the completion of an annual inspection and report, in accordance with **SECTION 8**. Targeted weed control will be completed (if necessary) in accordance with **SECTION 6.7.4**.

Immediately prior to commencement of construction works within Precincts 12 - 14, as detailed in **SECTIONS 6.6 and 6.8**, mapped retained and rehabilitation polygons within Management Zones 2 - 6 will be allocated an individual identifying number and will be clearly marked and identified on the ground (where necessary). Flat (5 cm x 2.5 cm) pegs (painted in white at the top) with the allocated identifying area number written on the white paint will be placed at each truncation on the boundaries of each polygon. However, where management polygons are encircled by another polygon requiring similar management (e.g. small WSF retained habitat polygon within a larger koala retained habitat polygon), only the outer boundary of the larger polygon will be pegged rather than the individual smaller polygons.

Immediately prior to commencement of construction works in Precincts 12 - 14, each management polygon within Precincts 12 - 14 EMAs will be assessed to determine and map the following:

- Areas requiring specific management actions (i.e. pegging boundaries, monitoring natural regeneration etc.);
- Areas requiring significant weed control i.e. in accordance with **SECTION 6.7**; and
- Areas of cleared/highly disturbed land that will require revegetation i.e. in accordance with **SECTION 6.8**.

This process will ensure that resources are adequately allocated to each rehabilitation area and to areas requiring the greatest level of rehabilitation effort.

8 MONITORING AND REPORTING

8.1 Introduction

Monitoring will be undertaken to determine the effectiveness of mitigation measures implemented. Monitoring will be required during the ‘establishment period³’ and ‘maintenance period⁴’ of the project as defined within the Project approval (MP08_0194). Monitoring of Precincts 12 - 14 EMAs has been separated into three (3) types:

- Baseline monitoring - completed in Management Zones 2 - 6;
- Monitoring of retained vegetation - completed in Management Zones 2 & 3; and
- Rehabilitation monitoring - completed in Management Zones 4 - 6.

Monitoring of exclusion fencing and other infrastructure (e.g. signage) will be completed in accordance with Section 8.5 of the Kings Forest KPOM (JWA 2019).

8.2 Baseline Monitoring

8.2.1 Background

Baseline monitoring will be completed by suitably qualified ecologists within retained habitat areas (Management Zones 2 & 3), compensatory habitat areas (Management Zones 4 & 5) and other proposed revegetation/ regeneration areas (i.e. Management Zone 6) in accordance with the following sections. Additionally, the bush regeneration team will gather baseline data at each weed treatment site prior to commencement of weed control (refer to **SECTION 8.4**).

8.2.2 Monitoring Locations

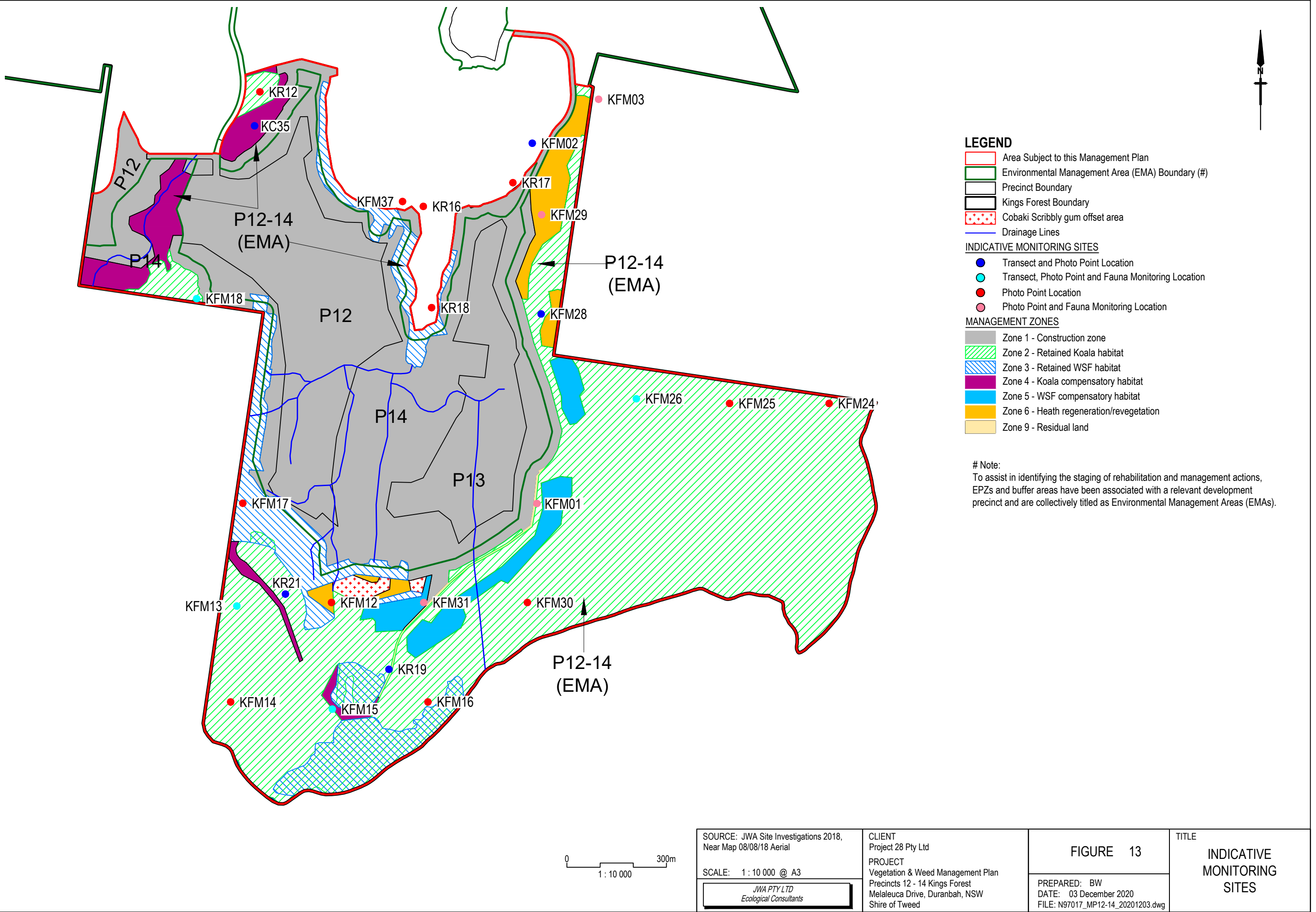
The locations of baseline monitoring within Management Zones 2 - 6 will generally utilise field sites sampled in 2010 during the Tweed Coast Koala Habitat Study (Phillips *et al.* 2011) where appropriate. Additional field sites have been identified to ensure representative sampling of all habitat types (**FIGURE 13**). The methodology for the Tweed Coast Koala Habitat Study included the positioning of a 600 m x 600 m grid overlaid on the site so as to ensure uniform and unbiased coverage.

Baseline data for other proposed revegetation/regeneration areas (i.e. Management Zone 6) will be collected from appropriate locations (i.e. suitable PCTs and/or TVMS communities) within the Cudgen Nature Reserve (**FIGURE 14**).

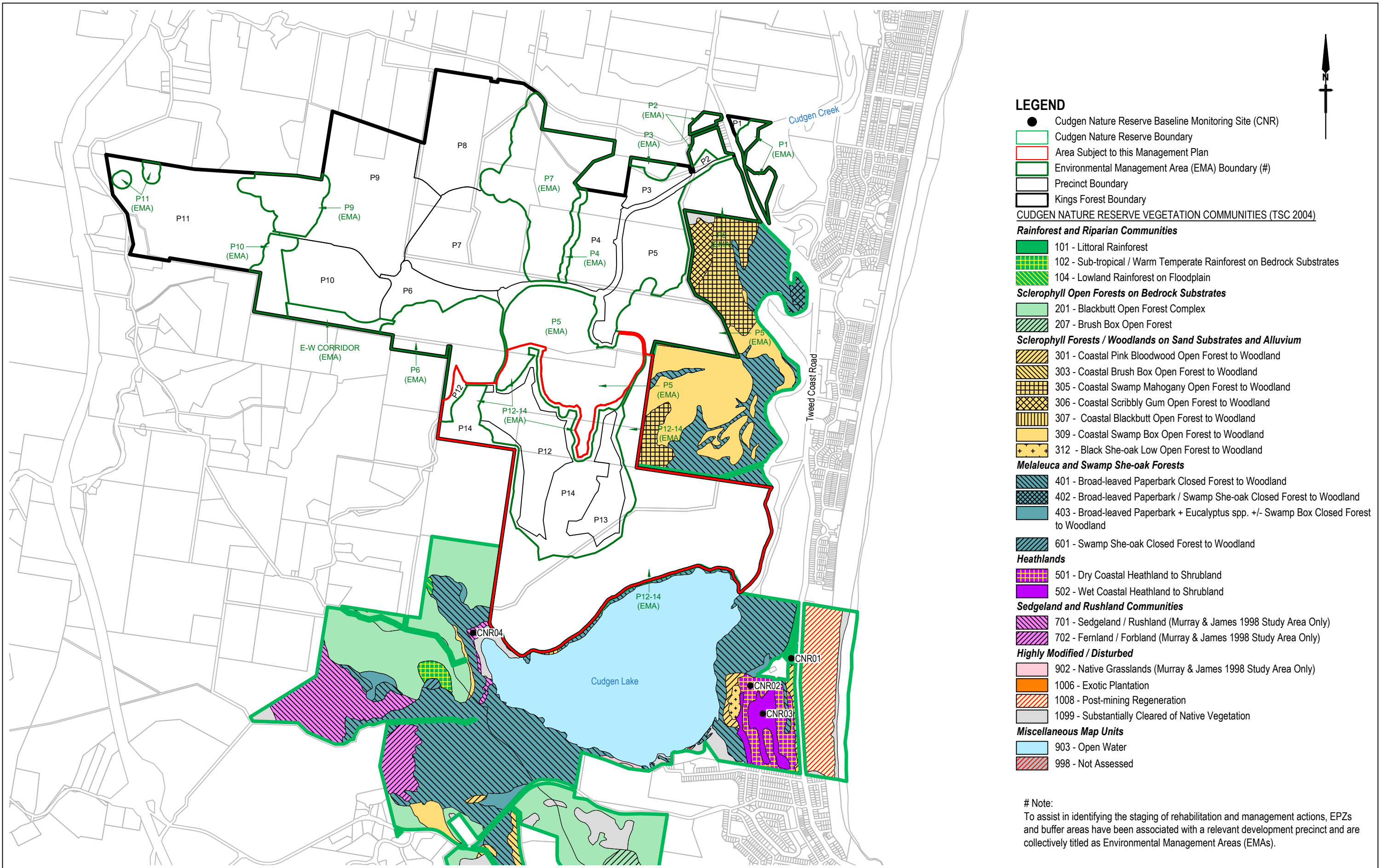
To determine appropriate baseline survey locations within Cudgen Nature Reserve, the TVMS (2004) vegetation mapping was reviewed and vegetation types compared to those within

³ means the period commencing with the implementation of the relevant approved environmental management plan(s) and ending when the works specified in that plan meet the establishment period performance criteria (as defined by the relevant approved environmental management plan) to the satisfaction of the Secretary. The establishment period represents the time necessary to carry out initial environmental repair, restoration and monitoring prior to ongoing maintenance.

⁴ means the period commencing immediately after the end of the establishment period during which environmental management and monitoring works specified in the relevant approved environmental management plan(s) are to be carried out in accordance with the maintenance period performance criteria (as defined by the relevant approved environmental management plan) to the satisfaction of the Secretary.



SOURCE: JWA Site Investigations 2018, Near Map 08/08/18 Aerial SCALE: 1 : 10 000 @ A3 JWA PTY LTD Ecological Consultants	CLIENT Project 28 Pty Ltd PROJECT Vegetation & Weed Management Plan Precincts 12 - 14 Kings Forest Melaleuca Drive, Duranbah, NSW Shire of Tweed	FIGURE 13	TITLE INDICATIVE MONITORING SITES
		PREPARED: BW DATE: 03 December 2020 FILE: N97017_MP12-14_20201203.dwg	



- LEGEND
- Cudgen Nature Reserve Baseline Monitoring Site (CNR)

Cudgen Nature Reserve Boundary

Area Subject to this Management Plan

Environmental Management Area (EMA) Boundary (#)

Precinct Boundary

Kings Forest Boundary
- CUDGEN NATURE RESERVE VEGETATION COMMUNITIES (TSC 2004)
- Rainforest and Riparian Communities**

101 - Littoral Rainforest

102 - Sub-tropical / Warm Temperate Rainforest on Bedrock Substrates

104 - Lowland Rainforest on Floodplain
- Sclerophyll Open Forests on Bedrock Substrates**

201 - Blackbutt Open Forest Complex

207 - Brush Box Open Forest
- Sclerophyll Forests / Woodlands on Sand Substrates and Alluvium**

301 - Coastal Pink Bloodwood Open Forest to Woodland

303 - Coastal Brush Box Open Forest to Woodland

305 - Coastal Swamp Mahogany Open Forest to Woodland

306 - Coastal Scribbly Gum Open Forest to Woodland

307 - Coastal Blackbutt Open Forest to Woodland

309 - Coastal Swamp Box Open Forest to Woodland

312 - Black She-oak Low Open Forest to Woodland
- Melaleuca and Swamp She-oak Forests**

401 - Broad-leaved Paperbark Closed Forest to Woodland

402 - Broad-leaved Paperbark / Swamp She-oak Closed Forest to Woodland

403 - Broad-leaved Paperbark + Eucalyptus spp. +/- Swamp Box Closed Forest to Woodland

601 - Swamp She-oak Closed Forest to Woodland
- Heathlands**

501 - Dry Coastal Heathland to Shrubland

502 - Wet Coastal Heathland to Shrubland
- Sedgeland and Rushland Communities**

701 - Sedgeland / Rushland (Murray & James 1998 Study Area Only)

702 - Fernland / Forbland (Murray & James 1998 Study Area Only)
- Highly Modified / Disturbed**

902 - Native Grasslands (Murray & James 1998 Study Area Only)

1006 - Exotic Plantation

1008 - Post-mining Regeneration

1099 - Substantially Cleared of Native Vegetation
- Miscellaneous Map Units**

903 - Open Water

998 - Not Assessed

Note:
To assist in identifying the staging of rehabilitation and management actions, EPZs and buffer areas have been associated with a relevant development precinct and are collectively titled as Environmental Management Areas (EMAs).

SOURCE: Tweed Vegetation Management Strategy 2004

SCALE: 1 : 25 000 @ A3

JWA PTY LTD
Ecological Consultants

CLIENT
Project 28 Pty Ltd
PROJECT
Vegetation & Weed Management Plan
Precincts 12 - 14 Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 14

PREPARED: BW
DATE: 17 November 2020
FILE: N97017_MP12-14_20201116.dwg

TITLE
CUDGEN NATURE RESERVE - BASELINE VEGETATION SURVEY SITES

Management Zone 6. Suitable locations for baseline surveys within Cudgen Nature Reserve (i.e. areas comprising the same PCTs/TVMS communities) are identified in **FIGURE 13** and listed in **TABLE 7** below.

TABLE 7
CUDGEN NATURE RESERVE BASELINE MONITORING SITES

Baseline Survey Site	Vegetation Type	PCT	TVMS
CNR02	Dry coastal heathland to shrubland	663	501
CNR03	Wet coastal heathland to shrubland	1297	502

8.2.3 Methodology

8.2.3.1 Introduction

To assess if the project completion criteria have been met, vegetation assessments will be completed using plot-based vegetation surveys (transects) and photo point monitoring at the locations discussed above.

8.2.3.2 Plot-Based Vegetation Surveys

Plot-based vegetation surveys (transects) will be undertaken at the monitoring locations shown on **FIGURES 13 and 14**. Vegetation survey sites will be permanently marked (i.e. star pickets or wooden stakes) and the end positions identified on a sitemap using a hand-held Global Positioning System (GPS).

The plot-based vegetation survey will be based on a 20 m × 20 m plot (or 400 m² equivalent for linear areas).

Survey plots should be established around a central 50 m transect as follows:

- a) One 400 m² plot (standard 20 m x 20 m) is used to assess all performance indicators as set out in **TABLE 8** below.
- b) Five 1 m² sub-plots can be added to the program for the first monitoring event to assess groundcover recruitment for the plot. A decision as to the utility of these plots can be made after the first or second monitoring events.

The assessor will assess the plot for the information contained in **TABLE 8**.

TABLE 8
VEGETATION SURVEY DATA TO BE COLLECTED

Attribute	Survey Required
Native Canopy Cover	Native canopy cover will be measured via the 'line intercept method' along the 50 m transect. Key canopy species will be noted.
Weed Canopy Cover	Weed canopy cover will be measured via the 'line intercept method' along the 50 m transect. Individual canopy weed species should be assessed separately.

Attribute	Survey Required
Native Midstorey Cover	Estimate the % foliage cover of each native species within the midstorey across the 400 m ² plot. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...).
Weed Presence in the Midstorey	Estimate the % foliage cover of each weed species within the midstorey across the 400 m ² plot. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...).
Groundcover	Estimate percentage cover of native species vs. weeds within each of the five (5) 1 m ² sub-plots. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...). Identify each native and weed groundcover species.

The full species name (genus species) must be recorded for all native species, unless insufficient diagnostic plant material is present, in which case the genus name followed by a species number must be used. Comments should also be included for all attributes (**TABLE 8**) on any notable variations elsewhere in the relevant management polygon - e.g. weeds occurring in the management polygon that are not (or poorly) represented in the transect.

8.2.3.3 Photo Point Monitoring

Photo-monitoring points will be completed as a means of demonstrating compliance or otherwise with performance criteria. Permanent photo stations are to be located at each monitoring location (**FIGURES 13 and 14**). Where transects are to be established, photo points have been located on each transect. Where selected vegetation/habitat polygons are too small in size and/or are not covered by transects, photo monitoring points will be identified, mapped and included in the baseline monitoring report.

Four (4) photos are to be taken from each photo point. Photos are to be taken to the north, south, east and west. Photos should be labelled with the:

- Transect code or photo point code;
- Direction of view; and
- Date & time.

Photos must be supplied in the Annual Monitoring Reports in a form of prints no smaller than 4" x 6" and must be colour.

8.2.4 Timing of Baseline Monitoring Visits

Collection of baseline data will be completed prior to commencement of construction. As it is likely that the development of Precincts 12 - 14 will not commence for 10 - 15 years, baseline monitoring will be repeated every five (5) years.

8.3 Pre-commencement Annual Monitoring

Due to the uncertainty of the timing of commencement of construction works within Precincts 12 - 14, it is proposed to undertake annual monitoring inspections until construction commences. Annual pre-commencement monitoring will consist of brief visual inspections of the Precinct 12 - 14 EMAs to identify any new and significant weed infestations requiring intervention and associated annual reporting (**SECTION 8.7.2**).

8.4 Bush Regeneration Team Monitoring

The Bush Regeneration Team will be gather baseline data at each weed treatment site prior to commencement of weed control to assist in documenting vegetation recovery in the long term. A baseline monitoring proforma is contained in **APPENDIX 6**.

The bush regeneration team will also keep detailed work sheets for all works completed within retained habitat areas (Management Zones 2 and 3), compensatory habitat areas (Management Zones 4 and 5) and other proposed revegetation/ regeneration areas (i.e. Management Zone 6), recording the following:

- All work completed each day;
- Site conditions;
- Chemicals used;
- Problems encountered; and
- Future works required.

A daily work sheet template is attached in **APPENDIX 7**. These records and general comments on progress will be provided to the Ecologist for consideration and inclusion in the annual vegetation monitoring reports (**SECTION 8.6.2**).

8.5 Monitoring Retained Vegetation

8.5.1 Background

Ongoing vegetation monitoring will be completed by an Ecologist within retained habitat areas (Management Zones 2 and 3), in accordance with the following sections. In addition, in the event of a planned or unplanned bushfire occurring on the Kings Forest site, an additional vegetation monitoring event is to be completed in accordance with the following sections.

8.5.2 Monitoring Locations

Ongoing vegetation monitoring within retained habitat areas (Management Zones 2 and 3) will utilise the same monitoring locations as the baseline monitoring as discussed in **SECTION 8.2** above.

In the event of a planned or unplanned bushfire on the Kings Forest site, an additional monitoring event is to be completed within the affected area at monitoring sites spaced no

more than 100 m. Where possible, this should include any of the standard monitoring sites as shown in **FIGURE 13**.

8.5.3 Methodology

Ongoing vegetation monitoring and additional bushfire monitoring events will utilise the same methodology (i.e. plot-based vegetation surveys and photo point monitoring) as discussed for the baseline monitoring above (**SECTION 8.2**).

8.5.4 Timing of Monitoring Visits

Monitoring events should occur:

- To set up monitoring transects and quadrats, and to collect the first round of monitoring data after 1st event of secondary weeding;
- Six (6) monthly until the establishment period performance criteria are met; and
- Then annually during the maintenance period.

In the event of a planned or unplanned bushfire on the Kings Forest site an additional monitoring event will be completed three (3) to six (6) months after the bushfire to inform any additional maintenance and rehabilitation requirements.

8.5.5 Performance Targets and Corrective Actions

TABLE 9 provides the performance indicators and targets for retained vegetation/habitat within Management Zones 2 & 3. Corrective actions are provided that are to be implemented if performance targets are not met.

TABLE 9
PERFORMANCE TARGETS AND CORRECTIVE ACTIONS

Performance Indicator	Target - Establishment period ¹	Target - Maintenance period ²	Corrective Actions
Natural recruitment of native species.	Evidence of natural recruitment of shrub and ground cover species.	Increasing natural recruitment of shrub and groundcover species.	Where natural recruitment fails to meet performance targets discussions with BCD and TSC shall be initiated by the proponent or their consultants to consider adjustments to the assisted regeneration strategy being used to improve natural recruitment.

Performance Indicator	Target - Establishment period ¹	Target - Maintenance period ²	Corrective Actions
All identified weeds controlled to an acceptable level within retained vegetation areas.	Foliage Projective Cover (FPC) (%) assessed using eye estimates or photo points reduced to <10% within first year.	Foliage Projective Cover (FPC) (%) assessed using eye estimates or photo points: - reduced to <10% within first year; <10% in second year; <5% in the third year and consecutive years.	Weed control as necessary.
Infrastructure (e.g. protection fencing, signage, erosion and sediment control devices) functional and well-maintained.	Relevant infrastructure maintained.	Relevant infrastructure in condition suitable for hand over to TSC.	Maintenance as necessary.

Notes:

¹ "Establishment period" means the period during which initial environmental repair, restoration and monitoring works required by the relevant approved environmental management plan(s) are undertaken. The establishment period ends when the works meet the establishment period performance criteria, as defined by the relevant approved environmental management plans, to the satisfaction of the Secretary.

² "Maintenance period" means the period of environmental management and monitoring works commencing immediately after the end of the establishment period. Maintenance period works are to be carried out in accordance with the relevant performance criteria (as defined by the relevant approved environmental management plan) to the satisfaction of the Secretary.

8.6 Rehabilitation Monitoring

8.6.1 Background

Monitoring is crucial in ensuring the continuing success of the rehabilitation program, including topsoil re-use areas, and will be carried out for the duration of this plan. Monitoring in accordance with this VWMP will be completed within heath revegetation/regeneration areas (Management Zone 6) (**FIGURE 13**).

Details of the rehabilitation monitoring program in this Management Zones are provided in the following sections.

Monitoring will also be completed within areas of compensatory habitat within the Precincts 12 - 14 EMAs (**FIGURE 13**) as follows:

- Management Zone 4 - Compensatory koala habitat: monitored in accordance with Section 8.4 of the KPOM (JWA 2019); and

- Management Zone 5 - Compensatory WSF habitat: monitored in accordance with Section 8.5 of the WSFMP (JWA 2020a).

The above documents contain detailed monitoring programs respectively including monitoring methodologies, locations, timing of monitoring events, performance targets and corrective actions.

In addition, in the event of a planned or unplanned bushfire occurring on the Kings Forest site, an additional rehabilitation monitoring event is to be completed in accordance with the following sections.

8.6.2 Monitoring Locations

Ongoing rehabilitation monitoring within Management Zone 6 will occur in locations shown in **FIGURE 13**. Field sites have been selected to ensure representative sampling of all rehabilitation areas within Management Zone 6 and to ensure uniform and unbiased coverage.

In the event of a planned or unplanned bushfire on the Kings Forest site, an additional monitoring event is to be completed within the affected area at monitoring sites spaced no more than 100 m. Where possible, this should include any of the standard monitoring sites as shown in **FIGURE 13**.

8.6.3 Methodology

Ongoing vegetation monitoring will utilise the same methodology (i.e. plot-based vegetation surveys and photo point monitoring) as discussed for the baseline monitoring above (**SECTION 8.2**), however the assessor will assess the plot for a slightly expanded list of details/data contained in **TABLE 10**.

TABLE 10
VEGETATION SURVEY DATA TO BE COLLECTED

Attribute	Survey Required
Seedling Survival	The first monitoring event will require a count of the total number of seedlings, individual species counts and a count of the number of dead or dying seedlings of each species. Subsequent monitoring events will only require counts of dead or dying seedlings and their species identification.
Native Canopy Cover	Native canopy cover will be measured via the 'line intercept method' along the 50 m transect. Key canopy species will be noted.
Weed Canopy Cover	Weed canopy cover will be measured via the 'line intercept method' along the 50 m transect. Individual canopy weed species should be assessed separately.
Native Midstorey Cover	Estimate the % foliage cover of each native species within the midstorey across the 400 m ² plot. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...).

Weed Presence in the Midstorey	Estimate the % foliage cover of each weed species within the midstorey across the 400 m ² plot. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...).
Groundcover species	Estimate percentage cover of native species vs. weeds within each of the five (5) 1 m ² sub-plots. Cover should be recorded in decimals if less than 1% (0.1, 0.2...), or whole numbers up to 5% (1, 2, 3...), or to the nearest 5% where greater than 5% cover (5, 10, 15, 20, 25...).
Shrub and Groundcover Recruitment	Identify the numbers of native shrub and groundcover species recruiting within each of the five (5) 1 m ² sub-plots. The identification of individual recruits may not be possible when they first appear. These should be recorded as unidentified until the next or subsequent monitoring events.

The full species name (genus species) must be recorded for all native species, unless insufficient diagnostic plant material is present, in which case the genus name followed by a species number must be used. Comments should also be included for all attributes (**TABLE 10**) on any notable variations elsewhere in the relevant management polygon - e.g. weeds occurring in the management polygon that are not (or poorly) represented in the transect.

8.6.4 Timing of Monitoring Visits

Monitoring events should occur:

- To set up monitoring transects and quadrats, and to collect the first round of monitoring data after 1st event of secondary weeding;
- Six (6) monthly until the establishment period performance criteria are met; and
- Then annually during the maintenance period.

In the event of a planned or unplanned bushfire on the Kings Forest site an additional monitoring event will be completed three (3) to six (6) months after the bushfire to inform any additional maintenance and rehabilitation requirements.

8.6.5 Performance Targets and Corrective Actions

TABLE 11 provides the performance indicators and targets for the proposed rehabilitation strategy within Management Zone 6. Corrective actions are provided that are to be implemented if performance targets are not met.

TABLE 11
PERFORMANCE TARGETS AND CORRECTIVE ACTIONS

Performance Indicator	Target - Establishment period ¹	Target - Maintenance period ²	Corrective Actions
Survival and continued growth of seedlings (i.e. planted stock).	>90% survival of plantings during all monitoring events.	>90% survival of plantings during all monitoring events	Irrigation if required. Additional planting if required.

Performance Indicator	Target - Establishment period ¹	Target - Maintenance period ²	Corrective Actions
Establishment of native ground cover within revegetation areas.	Planted ground covers substantially established ³ .	>60% after three (3) years; >80% after five (5) years;	Supplementary planting.
Establishment of native canopy cover (where applicable) within revegetation areas.	Planted trees substantially established ³ .	>60% canopy cover of native tree species >1.5 m in height after three (3) years; >80% canopy cover of native tree species >2.5m in height after five (5) years.	Monitoring and maintenance period must be extended until the targets are met.
Natural recruitment of native species throughout rehabilitation areas.	Evidence of natural recruitment of shrub and ground cover species.	Increasing natural recruitment of shrub and groundcover species.	Where natural recruitment fails to meet performance targets discussions with BCD and TSC shall be initiated by the proponent or their consultants to consider adjustments to the assisted regeneration strategy being used to improve natural recruitment.
All identified weeds controlled to an acceptable level within retained vegetation areas.	Foliage Projective Cover (FPC) (%) assessed using eye estimates or photo points reduced to <10% within first year.	Foliage Projective Cover (FPC) (%) assessed using eye estimates or photo points: - reduced to <10% within first year; <10% in second year; <5% in the third year and consecutive years.	Weed control as necessary.
Infrastructure (e.g. protection fencing, signage, erosion and sediment control devices) functional and well-maintained.	Relevant infrastructure maintained.	Relevant infrastructure in condition suitable for hand over to TSC.	Maintenance as necessary.

Performance Indicator	Target - Establishment period ¹	Target - Maintenance period ²	Corrective Actions
Notes: ¹ “Establishment period” means the period during which initial environmental repair, restoration and monitoring works required by the relevant approved environmental management plan(s) are undertaken. The establishment period ends when the works meet the establishment period performance criteria, as defined by the relevant approved environmental management plans, to the satisfaction of the Secretary. ² “Maintenance period” means the period of environmental management and monitoring works commencing immediately after the end of the establishment period. Maintenance period works are to be carried out in accordance with the relevant performance criteria (as defined by the relevant approved environmental management plan) to the satisfaction of the Secretary. ³ “Substantial establishment” of the koala habitat plantings means “the plantings have progressed beyond the need for intensive maintenance e.g. weed control, watering etc. and are clearly established by way of persisting through a recognised growth period and a suitably qualified horticultural/environmental specialist has provided a short report confirming that the plantings are established.”			

8.7 Reporting

8.7.1 Baseline Vegetation Monitoring Report

Subsequent to the completion of baseline vegetation monitoring, a report will be prepared outlining the results. The report will be provided to the Commonwealth DoE NSW DPI&E, NSW BCD and TSC and form the baseline for future monitoring. The baseline monitoring report will be available on the JWA website for twelve (12) months (www.jwaec.com.au/).

8.7.2 Pre-commencement Inspection Report

Subsequent to each annual pre-commencement inspection, a brief report will be prepared and will include:

- A log of any new weed species and/or infestations including a GPS location; and
- Recommendations as to their need for priority control (e.g. any highly invasive or noxious species should be controlled as a high priority).

Each annual Pre-commencement Inspection Report will be submitted to NSW DPI&E, NSW BCD and TSC within two (2) months of completion of the relevant monitoring.

8.7.3 Annual Vegetation Monitoring Report

After commencement of construction, an annual Vegetation Monitoring Report will be prepared which discusses the results of the monitoring of retained vegetation and rehabilitation areas against the Monitoring Performance Criteria identified in **SECTION 8.5.5** and **SECTION 8.6.5** respectively. The information provided in the report should include, but not necessarily be limited to:

- Works undertaken (i.e. A summary of bush regenerators daily reports);
- A presentation of the results of the particular monitoring event/s;
- A detailed discussion of the results of each particular monitoring event including additional monitoring completed after any planned or unplanned bushfire;

- A detailed comparison with the baseline parameters and with previous survey data, as appropriate;
- A statement of compliance with the Monitoring Performance Criteria identified in **SECTION 8.5.5** and **SECTION 8.6.5**;
- Any problems since the previous inspection (death of a significant number of seedlings, broken fences etc.) and what effects these issues have had on the regeneration area;
- Success or failure of measures implemented to rectify previously identified problems;
- Measures to be taken to rectify new problems; and
- Adaptive management log to ensure that the management plan remains relevant and effective (**SECTION 6.13.4**).

Each Annual Vegetation Monitoring Report will be submitted to NSW DPI&E, NSW BCD and TSC within two (2) months of completion of the relevant monitoring. The Annual Vegetation Monitoring Report will be available on the JWA website for twelve (12) months (www.jwaec.com.au/).

9 IMPLEMENTATION SCHEDULES

9.1 Introduction

Specific management actions discussed in **SECTION 6** will be triggered and completed within Precincts 12-14 and associated EMAs on a pre-construction, construction and operational phase basis. The implementation schedules provided in **TABLES 12 - 14** below summarise all pre-construction, construction and operational phase management strategies and identify the associated management actions, timing, responsibilities and performance measures. Indicative budgets have also been provided for works associated with this VWMP where appropriate.

In accordance with Project Approval (MP08_0194) Condition 72, evidence of commencement of implementation of this VWMP shall be provided to the Secretary prior to commencement of bulk earthworks.

Performance indicators and targets for the retained vegetation and proposed rehabilitation strategy to be achieved during the 'establishment period' and 'maintenance period' of the project (as defined within the Project approval MP08_0194) are contained in **SECTION 8.5.5** and **SECTION 8.6.5**. Corrective actions are also provided that are to be implemented if performance targets are not met.

9.2 Development Phases

Management actions outlined in this VWMP will be implemented in three (3) phases:

- Pre-construction Phase - The pre-construction phase of the development refers to all preliminary works required to be completed prior to commencement of construction e.g. preliminary survey work, baseline monitoring and commencement of compensatory habitat rehabilitation works.
- Construction Phase - The construction phase of the development refers to works completed to construct the development and includes clearing vegetation, bulk earthworks and the construction of infrastructure.
- Operational Phase - The operational phase of the development will commence postconstruction and after registration of the plan/s of subdivision for each precinct.

Commencement of construction is defined under Concept Plan Approval Condition B7 and Major Project Approval A13 as any physical works including clearing vegetation, the use of heavy duty equipment for the purpose of breaking ground for bulk earthworks, or infrastructure for the proposed project.

TABLES 12 - 14 detail the specific management actions that will be implemented within each development precinct during the pre-construction phase, construction phase and operational phases respectively.

9.3 Roles and Responsibilities

The successful implementation of this VWMP requires a number of key personnel to complete various roles. As many of the contractors for the project are yet to be appointed, these will be

specified and list of key contacts for the project contained in revised versions of the VWMP (in accordance with Conditions B1 and C2 of the Concept Plan Approval 06_0318, MOD 6). A summary of key roles/personnel responsible for the management strategies identified in TABLES 12 - 14 below includes:

Proponent

Project 28 Pty Ltd is the Proponent for the works as the approval holder.

Construction/Site Manager

The Construction/Site Manager (to be appointed) is a representative of the project team (typically the project engineer) and is responsible for coordinating the project consultants and construction contractor.

Principal Contractor

The Principal contractor (to be appointed) is responsible for the management of all activities involved in the construction phase of the development.

Site Supervisor

The Site Supervisor is a representative of the Principal Contractor (to be appointed) and responsible for overseeing all pre-clearing, clearing and construction activities are undertaken in accordance with the VWMP and subsequent environmental management documentation.

Ecologist

For the purposes of this VWMP means a qualified ecologist with appropriate training and at least five (5) years of experience in undertaking vegetation surveys.

Fauna Spotter Catcher

For the purposes of this VWMP means a suitably qualified ecologist/fauna handler agreed to by the Department. It is noted that the Fauna Spotter Catcher must hold a relevant scientific license and ethics approvals and a copy of these permits along with their contact details will be passed on to the Site Supervisor. The engaged Fauna Spotter Catcher will be responsible for the management/relocation of native fauna during any clearing activities.

Bush Regeneration Company

For the purposes of this VWMP means a suitably qualified Bush Regeneration Company that has demonstrable experience in the rehabilitation or revegetation of native vegetation communities in the Tweed region. It is noted that the Bush Regeneration Company must hold the necessary license and approvals. The engaged Bush Regeneration Company will be responsible for rehabilitation and weed management works on the site.

9.4 Implementation Table - Pre-construction Phase

TABLE 12
VEGETATION MANAGEMENT STRATEGIES - PRE-CONSTRUCTION PHASE

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
Environmental Officer(s)/ Community Liaison Officer	Zones 1 - 6	Appointment of Environmental Officer(s)/ Community Liaison Officer in accordance with MP08_0194 Condition 70 .	Proponent	Environmental Officer(s)/ Community Liaison Officer appointed as detailed in SECTION 6.12 and Section 7.13.3 of the Kings Forest KPoM (JWA 2019) prior to commencement of bulk earthworks*.
Baseline vegetation surveys and report	Zones 2 - 6	Baseline vegetation monitoring program to be completed within Precincts 12 - 14 in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Baseline vegetation surveys and reports completed in accordance with SECTION 8.2 . Reports provided to relevant government agencies in accordance with SECTION 8.7 . As it is likely that the development of Precincts 12 - 14 will not commence for 10 - 15 years, baseline monitoring will be repeated every five (5) years.
Pre-commencement inspections and reporting	All	Undertake annual monitoring inspections and reporting until construction commences.	Qualified Ecologist	Annual pre-commencement monitoring completed consisting of brief visual inspections of the Precinct 12 -14 EMAs to identify any new and significant weed infestations requiring intervention and associated annual reporting (SECTION 8.7.2). Each annual Pre-commencement Inspection Report will be submitted to NSW DPI&E, NSW BCD and TSC within two (2) months of completion of the relevant monitoring.
Baseline weed survey	Zones 2 - 8	Baseline weed surveys completed.	Suitably Qualified Bush Regeneration Company	Baseline monitoring data collected at each weed treatment area prior to the commencement of weed control in accordance with SECTION 8.4 .
Education of construction personnel	Zone 1	A construction personnel induction program shall be developed and implemented by the Proponent prior to commencement of construction.	Principal Contractor / Site Supervisor	A construction personnel induction program development and implemented and an annual report prepared detailing the induction procedure and personnel inducted in accordance with SECTION 6.2 and Section 7.2.1 of the Kings Forest KPoM (JWA 2019).
Survey plans and permanent marking of dedication areas	Zones 2 - 6	Mark the boundaries of proposed/future dedication areas as required by MP08_0194 Condition 3 .	Registered Surveyor	Report prepared prior to commencement of construction* containing survey plans showing the boundaries of the proposed dedication areas in accordance with SECTION 6.9 and Section 7.10 of the Kings Forest KPoM (JWA 2019). Permanent pegs placed in the ground. Survey plans lodged with the NSW DPI&E.
Weed control	Zones 2 - 6	Weeds controlled as required.	Suitably Qualified Bush Regeneration Company	All weeds controlled in accordance with SECTION 6.7 .
	Within adjacent areas of Cudgen Nature Reserve	Targeted weed control works as required: - Control of immature Pines up to 100 m into adjacent Cudgen Nature Reserve; and - Control of all other weeds up to 20 m into adjacent Cudgen Nature Reserve.	Suitably Qualified Bush Regeneration Company	All weeds controlled as required within adjacent areas of the Cudgen Nature Reserve in accordance with the SECTION 6.7 .
Management of Retained Vegetation/Habitat	Zones 2 - 3	Areas of retained vegetation to be clearly identified in the field and marked as required.	Suitably Qualified Bush Regeneration Company	Each retained vegetation area will be clearly identified on site with marking pegs prior to commencement of construction in each Precinct in accordance with SECTION 6.6 and Section 7.5 of the Kings Forest KPoM (JWA 2019).
		Retained vegetation/habitat managed as required by MP08_0194 Conditions 40 and 41 .	Suitably Qualified Bush Regeneration Company	Retained vegetation within the Precincts 12 - 14 ecological buffers will be protected and maintained in accordance with SECTION 6.6 and the following documents where applicable: - Kings Forest KPoM (JWA 2019) - Section 7.5; and - Kings Forest WSFMP (JWA 2020a) - Section 7.7.

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
Rehabilitation and Compensatory Habitat Works	Zones 4 - 6	Rehabilitation areas to be clearly identified in the field and marked as required.	Suitably Qualified Bush Regeneration Company	Each rehabilitation area will be clearly identified on site with marking pegs prior to commencement of construction in each Precinct in accordance with SECTION 6.8 and Appendix 8 of the Kings Forest KPoM (JWA 2020a).
		Rehabilitation works commenced as required by MP08_0194 Condition 40 and 41 .	Suitably Qualified Bush Regeneration Company	All regeneration/revegetation works (including compensatory koala and WSF habitat creation) to be commenced in accordance with SECTION 6.8 and the following documents where appropriate: - Kings Forest KPoM (JWA 2019) - Section 7.6; and - Kings Forest WSFMP (JWA 2020a) - Section 7.8.
Fire Management	Zones 1 - 6	Reduction of fire risk.	Proponent (until ownership is transferred).	Fire risk to be managed in accordance with the approved Bushfire Management Plan (BushfireSafe 2020) and associated Kings Forest Koala Fire Management Plan (Wildsite 2020) (SECTION 6.10).
Payment of bond and/or bank guarantee	Zones 2 - 6	In accordance with MP08_0194 Condition 50 , a bond for the implementation of environmental management, with the exception of koala compensatory habitat, is to be lodged with TSC.	Proponent	Prior to commencement of bulk earth works for each precinct, and every two (2) years thereafter, a cash bond or bank guarantee shall be lodged with TSC to ensure that the relevant environmental management plans for the associated Potential Council Land (PCL) are implemented as detailed in SECTION 6.11 and Section 7.6.7 the Kings Forest KPoM (JWA 2019).
Adaptive management	All Zones	Adaptive Management strategies implemented as required.	Proponent	Adaptive Management Log detailing issues raised and any changes made to this management plan to be updated as monthly and included in the Annual Vegetation Monitoring Report and published on the project website in accordance with SECTION 6.13 .

Notes:

* “Commencement of construction” for the purpose of this project, **Condition B7** (Concept Plan Approval) and **Condition A13** of the Major Project Approval, is taken to mean any physical works including clearing vegetation, the use of heavy duty equipment for the purpose of breaking ground for bulk earthworks, or infrastructure for the proposed project.

9.5 Implementation Table - Construction Phase

TABLE 13
VEGETATION MANAGEMENT STRATEGIES - CONSTRUCTION PHASE

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
Environmental Officer(s)/ Community Liaison Officer	Zones 1 - 6	Environmental Officer(s)/ Community Liaison Officer to oversee environmental compliance until all conditions have been satisfied as required by MP08_0194 Condition 70 .	Environmental Officer(s)/ Community Liaison Officer	Duties of the Environmental Officer(s)/ Community Liaison Officer completed in accordance with SECTION 6.12 and Section 7.13.3 of the Kings Forest KPoM (JWA 2019).
Exclusion fencing and other infrastructure	Zones 1 - 6	Fauna exclusion fencing and other infrastructure to be installed and maintained in accordance with MP08_0194 Conditions 46, 64, 121 and 148 and EPBC_2012/6328 Conditions 2, 3, and 4 .	Principal Contractor/Site Supervisor	All fencing (temporary and permanent) and associated infrastructure to be constructed prior to commencement of bulk earthworks* in accordance with SECTION 6.5 and Section 7.3.2 of the Kings Forest KPoM (JWA 2019). Permanent fencing will replace temporary fencing where applicable at the end of the construction phase of the development of each applicable Precinct in accordance with SECTION 6.5 and Section 7.3.2 of the Kings Forest KPoM (JWA 2019).
Construction phase management measures	Zones 1 - 6	All areas of vegetation to be cleared within each Precinct of the development will be clearly identified on construction plans and in the field prior to the commencement of construction.	Principal Contractor/Site Supervisor/Environmental Officer	All areas of vegetation to be cleared within each Precinct of the development will be clearly identified on construction plans and in the field prior to the commencement of construction in accordance with SECTION 6.3 .
		All activities in an area adjacent to any retained tree or area are to be carried out in such a manner as to minimise any damage to trees.	Principal Contractor/ Site Supervisor/ Environmental Officer	No trees to be retained are damaged by construction works in accordance with SECTION 6.3 .
		No machinery, rubbish or spoil will be stored within EMAs during the construction phase of the development.	Construction Manager	No machinery, rubbish or spoil stored within EMAs in accordance with SECTION 6.3 .
		No soil disturbance within areas of retained vegetation.	Principal Contractor/ Site Supervisor/ Environmental Officer	Soil is not disturbed within areas of retained vegetation in accordance with SECTION 6.3 .
		The establishment and propagation of weed species is prevented.	Principal Contractor/ Site Supervisor/ Environmental Officer	No new weed infestations occur during the construction phase in accordance with SECTION 6.3 .
	Zone 1	Sediment and erosion control devices installed prior to commencement of earthworks and maintained throughout construction phase.	Construction Manager	All erosion and sediment control devices installed and maintained in accordance with the Erosion and Sediment Control Plan (G&S 2020c) (SECTION 6.3).
	Zone 1	A designated shakedown/wash area will be established for personnel, equipment and vehicles. Designated shakedown / wash area will not be located in or immediately adjacent to the EMAs.	Construction Manager	All shakedown/wash areas installed prior to commencement of earthworks in accordance with the Erosion and Sediment Control Plan (G&S 2020c) (SECTION 6.3).
	Zone 1	Pre-clearing fauna trapping program as required.	Qualified Ecologist	Prior to commencement of any vegetation clearing works a pre-clearing site inspection will be completed to identify and mark habitat trees or other habitat features within the clearing area in accordance with SECTION 6.4.1 and Section 7.2.2 of the Precincts 12 - 14 TSMP (JWA 2020c).

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
				Subsequent to the site inspection, and immediately prior to commencement of site clearing works, a pre-clearing trapping program will be completed within any areas of relatively intact vegetation to be cleared in accordance with SECTION 6.4.1 and Section 7.2.2 of the Precincts 12 - 14 TSMP (JWA 2020c). Any animals captured to be relocated to suitable areas of retained habitat.
		Appointment of fauna spotter catcher as required by MP08_0194 Condition 96.	Proponent	The proponent will appoint a suitably qualified fauna spotter catcher to conduct a pre-clearing site inspections and to be present during all clearing activities to rescue and relocate any native fauna species as necessary in accordance with SECTION 6.4.2 , Section 7.2.2 of the Kings Forest KPoM (JWA 2019) and Section 7.2.3 of the Kings Forest WSFMP (JWA 202a).
		A fauna spotter catcher will be present during all vegetation clearing works in accordance with MP08_0194 Condition 96.	Fauna Spotter Catcher	A suitably qualified fauna spotter catcher is to be present during all clearing activities to rescue and relocate any native fauna species as necessary in accordance with SECTION 6.4.2 , Section 7.2.2 of the Kings Forest KPoM (JWA 2019) and Section 7.2.3 of the Kings Forest WSFMP (JWA 2020a).
		Pre-clearing inspections as required by EPBC_2012/6328 Condition 18.	Fauna Spotter Catcher	Pre-clearing site inspections will be completed no more than one day prior to commencement of bulk earth moving activities within each precinct in accordance with SECTION 6.4.2 , Section 7.2.2 of the Kings Forest KPoM (JWA 2019) and Section 7.2.3 of the Kings Forest WSFMP (JWA 2020a).
		Construction phase fauna management procedures to be implemented as required.	Principal Contractor/ Site Supervisor/ Fauna Spotter Catcher	Construction phase fauna management procedures are to be implemented in accordance with SECTION 6.4.
		A post-clearing spotter catcher report to be prepared.	Fauna Spotter Catcher	A post-clearing spotter catcher report is submitted to Council (SECTION 6.4.5).
		Fauna Incident Reporting Protocols as required by MP08_0194 Condition 76.	Principal Contractor	Any koala or WSF observation or incident within buffers during the construction phase will result in an observation/incident report in accordance with SECTION 6.4.6 , Section 7.2.6 of the Kings Forest KPoM (JWA 2019) and Section 7.2.5 of the Kings Forest WSFMP (JWA 2020a).
Access management	Zones 1 - 6	Gates installed and secured where relevant.	Construction Manager	Where the length of fencing (permanent or temporary) in buffer zones is greater than 100 metres, a gate will be provided to allow access for routine maintenance, rehabilitation work and monitoring in accordance with SECTION 6.5.2 . No locks on the gates will be required for the duration of the site development, however secure fastening structures must be provided for each gate.
Weed control	Zones 2 - 6	Weeds controlled as required.	Suitably Qualified Bush Regeneration Company	All weeds controlled in accordance with SECTION 6.7.
	Within adjacent areas of Cudgen Nature Reserve	Targeted weed control works as required: - Control of immature Pines up to 100 m into adjacent Cudgen Nature Reserve; and - Control of all other weeds up to 20 m into adjacent Cudgen Nature Reserve.	Suitably Qualified Bush Regeneration Company	All weeds controlled as required within adjacent areas of the Cudgen Nature Reserve in accordance with the SECTION 6.7.
Regeneration and revegetation	Zones 4 - 6	Regeneration and revegetation works carried out as required.	Suitably Qualified Bush Regeneration Company	All regeneration/revegetation works to be carried out in accordance with SECTION 6.7 and the following documents where appropriate: - Kings Forest KPoM (JWA 2019) - Section 7.6; and - Kings Forest WSFMP (JWA 2020a) - Section 7.8.
Maintenance of retained vegetation	Zones 2 - 3	Retained vegetation/habitat managed as required.	Suitably Qualified Bush Regeneration Company	Retained vegetation protected and maintained in accordance with SECTION 6.6 and the following documents where applicable: - Kings Forest KPoM (JWA 2019) - Section 7.5; and - Kings Forest WSFMP (JWA 2020a) - Section 7.7.

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
Retained vegetation monitoring	Zones 2 - 3	Retained vegetation monitoring program to be completed in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Ongoing retained vegetation monitoring program and reporting completed in accordance with SECTION 8.5 . Reports provided to relevant government agencies in accordance with SECTION 8.7 .
Rehabilitation monitoring	Zones 4 - 6	Rehabilitation monitoring program to be completed in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Ongoing rehabilitation monitoring program and reporting completed in accordance with SECTION 8.6 . Reports provided to relevant government agencies in accordance with SECTION 8.7 .
Monitoring after bushfire	Zones 2 - 8	Additional monitoring completed after bushfires in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Additional monitoring event completed after any planned or unplanned bushfire in accordance with SECTION 8.5 and SECTION 8.6 .
Fire management	Zones 1 - 6	Reduction of fire risk.	Proponent (until ownership is transferred).	Fire risk to be managed in accordance with the approved Bushfire Management Plan (BushfireSafe 2020) and associated Kings Forest Koala Fire Management Plan (Wildsite 2020) - (SECTION 6.10).
Payment of bond and/or bank guarantee	Zones 2 - 6	In accordance with MP08_0194 Condition 50 , a bond for the implementation of environmental management, with the exception of koala compensatory habitat, is to be lodged with TSC.	Proponent	Prior to commencement of bulk earth works for each precinct, and every two (2) years thereafter, a cash bond or bank guarantee shall be lodged with TSC to ensure that the relevant environmental management plans for the associated Potential Council Land (PCL) are implemented as detailed in SECTION 6.11 and Section 7.6.7 the Kings Forest KPoM (JWA 2019).
Adaptive management	All Zones	Adaptive Management strategies implemented as required.	Proponent	Adaptive Management Log detailing issues raised and any changes made to this management plan to be updated as monthly and included in the Annual Vegetation Monitoring Report and published on the project website in accordance with SECTION 6.13 .

Notes:

* “**Commencement of construction**” for the purpose of this project, **Condition B7** (Concept Plan Approval) and **Condition A13** of the Major Project Approval, is taken to mean any physical works including clearing vegetation, the use of heavy duty equipment for the purpose of breaking ground for bulk earthworks, or infrastructure for the proposed project.

9.6 Implementation Table - Operational Phase

TABLE 14
VEGETATION MANAGEMENT STRATEGIES - OPERATIONAL PHASE

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
Environmental Officer(s)/Community Liaison Officer	Zones 1 - 6	Environmental Officer(s)/ Community Liaison Officer to oversee environmental compliance until all conditions have been satisfied as required by MP08_0194 Condition 70 .	Environmental Officer(S)/Community Liaison Officer	Duties of the Environmental Officer(s)/ Community Liaison Officer completed in accordance with SECTION 6.12 and Section 7.13.3 of the Kings Forest KPoM (JWA 2019).
Exclusion fencing and other infrastructure	Zones 1 - 6	Fauna exclusion fencing and other infrastructure to be maintained in accordance with MP08_0194 Conditions 46, 64, 121 and 148 and EPBC_2012/6328 Conditions 2, 3, and 4 .	Principal Contractor/Site Supervisor	All fencing and associated infrastructure to be maintained in accordance with SECTION 6.5 and Section 7.3.2 of the Kings Forest KPoM (JWA 2019).
Access management	Zones 1 - 6	At the completion of the monitoring program locks will be provided to all gates. Keys will be held by Tweed Shire Council and BCD (NPWS) where appropriate.	Construction Manager	All gates installed and maintained in accordance with SECTION 6.5.2 .
Weed control	Zones 2 - 6	Weeds controlled as required.	Suitably Qualified Bush Regeneration Company	All weeds controlled in accordance with SECTION 6.7 .
	Within adjacent areas of Cudgen Nature Reserve	Targeted weed control works as required: - Control of immature Pines up to 100 m into adjacent Cudgen Nature Reserve; and - Control of all other weeds up to 20 m into adjacent Cudgen Nature Reserve.	Suitably Qualified Bush Regeneration Company	All weeds controlled as required within adjacent areas of the Cudgen Nature Reserve in accordance with the SECTION 6.7 .
Regeneration and revegetation	Zones 4 - 6	Regeneration and revegetation works completed as required.	Suitably Qualified Bush Regeneration Company	All regeneration/revegetation works to be completed in accordance with SECTION 6.8 and the following documents where appropriate: - Kings Forest KPoM (JWA 2019) - Section 7.6; and - Kings Forest WSFMP (JWA 2020a) - Section 7.8.
Maintenance of retained vegetation	Zones 2 - 3	Retained vegetation/habitat managed as required.	Suitably Qualified Bush Regeneration Company	Retained vegetation protected and maintained in accordance with SECTION 6.6 and the following documents where applicable: - Kings Forest KPoM (JWA 2019) - Section 7.5; and - Kings Forest WSFMP (JWA 2020a) - Section 7.7.
Retained vegetation monitoring	Zones 2 - 3	Retained vegetation monitoring program to be completed in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Ongoing retained vegetation monitoring program and reporting completed in accordance with SECTION 8.5 . Reports provided to relevant government agencies in accordance with SECTION 8.7 .
Rehabilitation monitoring	Zones 4 - 6	Rehabilitation monitoring program to be completed in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Ongoing rehabilitation monitoring program and reporting completed in accordance with SECTION 8.6 . Reports provided to relevant government agencies in accordance with SECTION 8.7 .
Monitoring after bushfire	Zones 2 - 8	Additional monitoring completed after bushfires in accordance with MP08_0194 Condition 37 .	Qualified Ecologist	Additional monitoring event completed after any planned or unplanned bushfire in accordance with SECTION 8.5 and SECTION 8.6 .
Fire management	Zones 1 - 6	Reduction of fire risk.	Proponent (until ownership is transferred)	Fire risk to be managed in accordance with the approved Bushfire Management Plan (BushfireSafe 2020) and associated Kings Forest Koala Fire Management Plan (Wildsite 2020) (SECTION 6.10).
Payment of bond and/or bank guarantee	Zones 2 - 6	In accordance with MP08_0194 Condition 50 , a bond for the implementation of environmental management, with the	Proponent	Prior to commencement of bulk earth works for each precinct, and every two (2) years thereafter, a cash bond or bank guarantee shall be lodged with TSC to ensure that the relevant environmental

Management Strategy	Management Zone	Management Action	Responsibility	Performance Measure
		exception of koala compensatory habitat, is to be lodged with TSC.		management plans for the associated Potential Council Land (PCL) are implemented as detailed in SECTION 6.11 and Section 7.6.7 the Kings Forest KPoM (JWA 2019).
Adaptive management	All Zones	Adaptive Management strategies implemented as required.	Proponent	Adaptive Management Log detailing issues raised and any changes made to this management plan to be updated as monthly and included in the Annual Vegetation Monitoring Report and published on the project website in accordance with SECTION 6.13 .

10 INDICATIVE COSTINGS

TABLE 15 contains an indicative costing for the implementation of mitigation measures within Precincts 12 - 14.

It is noted that additional costings for management actions outside the scope of this VWMP (i.e. associated with compensatory koala and WSF habitat, feral animal management, bushfire management etc.) are provided in the relevant management plans.

TABLE 15
INDICATIVE COSTINGS

Management Action/Item	Cost (\$)*** Establishment Phase	Cost (\$)*** Maintenance Phase
Construction phase management measures	Subject to arrangements with Principal Contractor	N/A
Baseline vegetation surveys and report	\$25,000	N/A
Pre-clearing fauna trapping and fauna spotter catcher	\$35,000	N/A
Targeted weed control within adjacent Cudgen Nature Reserve (26.25 ha @ \$2,500/hectare)	\$65,625	\$65,625/year
Management of Retained Vegetation/Habitat (144.51 ha @ \$2,500/hectare)		\$353,775/year
Monitoring and Reporting		\$50,000/year
Feral animal management	Consult approved Kings Forest FAMP (JWA 2020e)	
Bushfire management	Consult approved Kings Forest Bushfire Management Plan (BushfireSafe 2020)	
* Proposed to be funded from the proponents ongoing cash flow during the development		

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APPENDIX 1 - COMPLIANCE WITH RELEVANT APPROVAL CONDITIONS

CONDITION	SECTION OF VWMP
Concept Plan Approval - Condition C2 <i>Vegetation Management Plan</i> <i>“Each Vegetation Management Plan update is to provide details on:</i> <i>1. the short, medium and long-term measures to be implemented to rehabilitate degraded areas, and manage remnant vegetation and habitat within the buffers and Environmental Protection zoned land within the site.</i> <i>2. revegetation and regeneration including establishment of appropriate canopy (including koala feed trees), sub-canopy, understorey and ground strata.</i> <i>3. rehabilitation of creeks and drainage lines.</i> <i>4. conserving and re-using, where appropriate, the soil seed bank where good quality native vegetation is being removed.</i> <i>5. collection and propagation of endemic native seed for revegetation on the site.</i> <i>6. monitoring of water quality and vegetation health within buffers and environmental protection zoned areas.</i> <i>7. the design, regeneration/revegetation and management of the east-west wildlife corridor/s.</i> <i>8. measurable performance criteria are to be based on appropriate reference sites within the adjacent Cudgen Nature Reserve.”</i>	1. Pre-construction, construction and operational phase measures to be implemented to rehabilitate and manage habitat within EMAs are detailed in SECTIONS 6-9. 2. Revegetation and rehabilitation measures are provided in SECTION 6.8. 3. Revegetation and rehabilitation measures will occur in Management Zones 2-6 and 8 within and adjacent to creeks and drainage lines (SECTION 6.8, FIGURE 10). 4. No appropriate areas exist within the Precincts 12-14 area for re-use of topsoil seed bank. 5. Plants to be used for revegetation are to be obtained from a local nursery able to supply stock from local provenance. Where existing nursery stock from local provenance is not available collection from species which occur onsite should be carried out as detailed in SECTION 6.8. 6. Detailed monitoring programs for the retained vegetation areas are provided in SECTION 8.4. A detailed water quality monitoring program is included in the

CONDITION	SECTION OF VWMP
	Overall Water Management Plan (G&S 2020b). 7. Rehabilitation of the East-West Corridor is addressed in the Kings Forest (JWA 2019). 8. Measurable performance criteria will be collected from reference sites within Cudgen Nature Reserve (SECTION 8.2).
Concept Plan Approval - Condition C2 <i>Weed Management Plan</i> <i>“Each Weed Management Plan update is to detail ongoing weed management measures for each relevant stage”.</i>	This VWMP considers and details ongoing weed management measures for Precinct 12-14 of the Kings Forest development site.
Major Project Approval - Condition 39 <i>“1) All Environmental Management Plans shall be revised to address management actions to be undertaken throughout the life of the project as relevant to the development precincts that the plan covers. This includes a detailed set of agreed establishment and maintenance phase performance completion criteria, ongoing monitoring and an annual maintenance schedule of works following the initial establishment period.</i> <i>2. Performance criteria for all management plans are reviewed to ensure they are specific to each precinct and action, measurable, achievable, relevant and timely.</i> <i>3) The implementation schedule of all Environmental Management Plans shall be revised to include the following details as relevant to the precincts that the plan covers:</i> <i>a. Actions that are specific to the precinct for which they are addressing</i> <i>b. Specific map references to identify locations of works for all actions</i> <i>c. Total areas to be planted (m2)</i>	1. All Environmental Management Plans have been updated in accordance with Condition 39. 2. SECTION 8.5.5 and 8.6.5 detail the performance criteria. 3. a. The tables in SECTION 7 and 8 identify actions related to Precincts 12-14. b. Specific Management Zones are identified in FIGURE 10. c. SECTION 6.8, TABLE 5. d. SECTION 6.8. e. Refer Precincts 6-14 BMP (JWA 20120b). f. SECTION 6.8.

CONDITION	SECTION OF VWMP
d. Planting density (per m2) e. Number of permanent signs to be erected and maintained f. Total areas for weed management activities (m2) g. Length of any fencing (temporary and permanent) h. Total areas for heath regeneration and revegetation (m2) i. Locations and areas (m2) of proposed threatened species habitat j. Timing and frequency of actions k. Monitoring requirements (frequency) that are specific to the action”.	g. Refer to KPOM (JWA 2019) and WSFMP (2020a). h. SECTION 6.8. i. Locations and areas of proposed threatened species habitat are detailed in the Precincts 12-14 TSMP (JWA 2020c), KPOM (JWA 2019) and WSFMP (JWA 2020a). j. Timing and frequency of actions are detailed in SECTIONS 6-9. k. Monitoring requirements and frequency are discussed in SECTION 8.
Major Project Approval - Condition 40 “1) The Works Schedule of all Vegetation Management Plans shall be amended to include “Assisted natural regeneration” as the preferred Proposed Measure for Works Areas 2, 13 and Additional Work Areas and wherever significant natural regeneration is occurring within the EPZ and/or ecological buffer areas. This approach should be adopted in preference to revegetation or rehabilitation programs, incorporated as a guiding principle in the Statement of Commitments and relevant plans. 2) The final Vegetation Management Plans shall be prepared in consultation with Council and submitted to the Secretary for approval within 6 months of the date of determination of the application (No. 2012/2328) made under sections 130(1) and 133 of the Commonwealth Environment Protection and Biodiversity Conservation Act or prior to issue of any construction certificate, whichever occurs first.”	1) This VWMP has been amended to include assisted natural regeneration where relevant (SECTION 6.8). 2) The VWMP has been prepared in consultation with Council.

CONDITION	SECTION OF VWMP
Major Project Approval - Condition 42 <i>“The Weed Management Plans shall be amended to ensure that:</i> 1) <i>Control of all weeds will occur:</i> <i>– In Environmental Protection Zones located on the Kings Forest site; and</i> <i>– For a distance of 20 metres into the adjacent Cudgen Nature Reserve.</i> 2) <i>Control of Slash pine only will occur for a further distance of 80 metres into Cudgen Nature Reserve.</i> 3) <i>Weed management activities should be undertaken utilising bush regeneration techniques including stem injection.”</i>	1. Areas to be targeted for weed control activities are outlined in SECTION 6.7 and FIGURE 9. 2. Cudgen Nature Reserve weed control activities are outlined in SECTION 6.7. 3. Weed management activities are discussed in SECTION 6.7.

APPENDIX 2 - ADDITIONAL KINGS FOREST MANAGEMENT PLANS AND THEIR RELATIONSHIP TO THE PRECINCTS 12-14 VWMP

Management Plan	Relationship to the Precincts 12-14 VWMP
Kings Forest Koala Plan of Management (JWA 2019)	The aim of the Kings Forest KPoM is to protect and conserve the Koala population in the Kings Forest area to ensure its ongoing survival through appropriate management of project impacts. The objectives are: • To ensure that the proposed development does not remove significant areas of habitat known, or likely to be important for the local Koala population; • To ensure that movement corridors for the local Koala population are maintained and/or improved; • To protect individual Koalas from injury or other adverse impacts during the development phase; • To embellish the habitat values of the site, including the creation of Koala habitat as part of a comprehensive offset strategy; • To protect, restore and provide for ongoing maintenance of existing koala habitat; • To ensure that changes in the local environment resulting from the proposed development (e.g. additional traffic, introduction of dogs) do not significantly impact on the local Koala population; • To ensure that Koalas continue to utilise habitat at Kings Forest; • To ensure appropriate monitoring and management programs are undertaken; • To raise awareness and promote community ownership of environmental management (including the conservation of the local Koala population); • Compliance with relevant conditions; and • Further revision of the KPoM as appropriate.

Management Plan	Relationship to the Precincts 12-14 VWMP
Kings Forest Wallum Sedge Frog Management Plan (JWA 2020a)	The aim of the Kings Forest WSFMP is to protect and conserve the WSF population in the Kings Forest area to ensure the ongoing survival of the population through appropriate management of project impacts. The objectives are: • To ensure that the proposed development does not remove areas of habitat outside of approved clearing areas; • To ensure that movement corridors for the local WSF population are maintained and/or improved; • To protect WSF from injury or other adverse impacts associated with the construction phase of the development through the implementation of appropriate management actions; • To improve the habitat values of the site, including the creation of WSF habitat as part of a comprehensive and staged offset strategy; • To protect WSF from injury or other adverse impacts associated with the operational (post-construction) phase of the development through the implementation of appropriate management actions; • To ensure that WSF continue to utilise habitat at Kings Forest by way of providing for effective monitoring of performance in relation to the provisions of this WSFMP; • To raise awareness and promote community ownership of environmental management (including the conservation of the local WSF population); • Compliance with relevant conditions; and • Revision of the WSFMP as appropriate.
Kings Forest Precincts 6 - 14 Buffer Management Plan (JWA 2020b)	The aim of the BMP is to provide guidelines, strategies and methods for the treatment and management of EMAs. The BMP provides details of the protection of retained and compensatory habitat where these areas occur within ecological buffers within Precincts 6 - 14.

Management Plan	Relationship to the Precincts 12-14 VWMP
Kings Forest Precincts 12-14 Threatened Species Management Plan (JWA 2020c)	The TSMP has been prepared to address the management of other Threatened species and their habitat/s occurring in in EMAs within Precincts 12-14. The TSMP contains the following objectives: • Weed control measures specific to areas containing listed threatened flora and fauna; • Guidelines for the control of human and animal access to areas containing threatened species; • Strategies for the embellishment of threatened species habitat through revegetation works and/or the creation of compensatory habitat areas where required.
Kings Forest Flora and Fauna Monitoring Report (JWA 2020d)	The Kings Forest Flora and Fauna Monitoring Report summarises all flora and fauna monitoring requirements of the development including the koala monitoring program.
Kings Forest Feral Animal Management Plan (JWA 2019e)	The aim of the FAMP is to develop a comprehensive and integrated approach to guide the immediate and long-term management of feral animals within EMAs associated with the development of the Kings Forest site and to ensure the protection of native fauna species, with a primary focus on threatened species. Specific objectives of the FAMP are to: • Review relevant literature on feral animal control; • Identify feral animals which have been recorded at the site; • Prioritise species considered to warrant priority management; • Examine control and/or eradication methods for 'high priority' feral animals; and • Recommend long-term control methods, including monitoring and reporting.
Kings Forest Stage 1 Bushfire Management Plan (BushfireSafe 2020)	A fundamental strategy of the Kings Forest Stage 1 Bushfire Management Plan is to assess and manage fuel loads within the Kings Forest site. The risk of high intensity fires will be reduced through controlled low intensity burns or mechanical means if and where appropriate. High-

Management Plan	Relationship to the Precincts 12-14 VWMP
	intensity hazard reduction burns and wildfires that result in crown scorch or crown fires should be avoided.
Kings Forest Koala Fire Management Plan (Wildsite 2020)	The Kings Forest Koala Fire Management Plan details fire management strategies for koala habitat areas on the Kings Forest site. The aim of this plan is to protect and conserve the population and habitat of koalas and other associated biodiversity values in the Kings Forest area through the restoration and maintenance of appropriate fire regimes.
Construction Environmental Management Plan (MUS 2020)	The Construction Environmental Management Plan provides details sufficient to understand and avoid, mitigate and remedy all potential environmental impacts of the project during construction.
Kings Forest Summary of Management Plans (G&S 2020a)	The Kings Forest SOMP has been prepared to summarise all of the management requirements of the various management plans.

APPENDIX 3 - SPECIES SPECIFIC WEED CONTROL TECHNIQUES

Target Weed		Recommended Techniques
Common Name	Botanical Name	
Balloon Cotton Bush	<i>Gomphocarpus physocarpus</i>	Hand-pull; spray (G 1:100 + surfactant).
Barner Grass	<i>Pennisetum purpureum</i>	Overspray (G 1:100); slash back and spray regrowth.
Billygoat Weed	<i>Ageratina houstonianum</i>	Spray or hand-pull and spray regrowth (G 1:100 + surfactant).
Bird of Paradise	<i>Strelitzia</i> sp.	- Hand pull young plants and bag and disposed of appropriately. - Glyphosate (G 1:100 + surfactant) can be applied as a cut stump, stem injection or basal bark application for mature plants.
Bitou Bush	<i>Chrysanthemoides monilifera</i>	- Hand pull young plants and hang up. - Cut-scrape-paint at 1:1.5 glyphosate for small plants. - Systematic knapsack over spraying of Roundup at the rate of 1:200 with LI700 at a rate of 5ml per litre if no risk to native seedlings.
Blackberry Nightshade	<i>Solanum nigrum</i>	Spray/hand-pull and spray regrowth (G 1:100 + surfactant).
Broad-leaved Paspalum	<i>Paspalum dilatatum</i>	Spray (G 1:100 + surfactant).
Camphor Laurel	<i>Cinnamomum camphora</i>	- Seedlings: hand-pull/spray (G 1:100 + MM [1-2g/10L] + surfactant). - Stems: <100mm CSP (G 1:1) >100mm frill or inject @ <250mm (G 1:1 2ml/cut) >250mm diameter (G neat 2ml/cut).
Canna Lily	<i>Canna indica</i>	Mattock out or Spray (G 1:100 + surfactant).
Castor Oil Plant	<i>Ricinus communis</i>	Spray (G 1:100 + surfactant) or hand remove. C&P (G 1:1.5)
Cherry Guava	<i>Psidium cattleianum</i>	- Hand pull seedlings where possible (i.e. wet areas). - Spray seedlings up to 50 cm tall with Glyphosate 1:50 or Glyphosate 1:50 plus Metsulfuron Methyl 1-2 g /10 l H2O. - For plants greater than 50 cm tall and less than 5 cm basal diameter apply Access © (1:30 diesel) using basal bark method. Do not use this method within 5 m of creeks. - For plants over 5 cm basal diameter cut and paint immediately with Access © (1:30 diesel).

Target Weed		Recommended Techniques
Common Name	Botanical Name	
		Alternate methods (off label, requires permit): cut and paint with Garlon © (1:60 diesel) or Starane © (35 ml per l diesel) or basal bark application with Garlon © (1:60 diesel) or Starane © (35 ml per l diesel).
Chinese Burr	<i>Triumfetta rhomboidea</i>	Spray (G 1:100 + surfactant).
Chinese Elm	<i>Celtis sinensis</i>	- Seedlings: Hand pull or spray - 1 part Glyphosate to 50 parts water, surfactant, or for better results spray 1 part Glyphosate to 50 parts water + 1.5g Metsulfuron methyl:10L water, spray adjuvant. - Saplings: Cut, scrape and paint - 1 part Glyphosate to 1.5 parts water. - Trees: Stem injection - 1 part Glyphosate to 1.5 parts water.
Coastal Morning Glory	<i>Ipomoea cairica</i>	- Roll up long runners CSP (G 1:1.5). - Spray (G 1:100 + surfactant). - Stem: Scrape and paint (G 1:1.5).
Cocos Palm	<i>Syagrus romanzoffianum</i>	- Seedling: hand-pull/crown seedlings - Stem: mattock out small trees or cut at ground level below growing joint.
Common Carpet Grass	<i>Axonopus affinis</i>	Spray (G 1:100 + surfactant).
Coral Tree	<i>Erythrina sykesii</i>	Frill with glyphosate (1:1) - requires deep cuts with chainsaw/axe and a large volume of herbicide.
Corky Passionfruit	<i>Passiflora suberosa</i>	- Seedling and regrowth: Spray (G 1:100+ surfactant or G 1:100 + MM 1-1.5gm/10L + surfactant). - Stems: CS&P (G 1:1.5).
Crofton Weed	<i>Ageratina adenophora</i>	Spray: (G 1:100 or MM 1g/10L + surfactant).
Cuphea	<i>Cuphea carthagenensis</i>	Spray (G 1:100 + LI700®).
Duranta	<i>Duranta repens</i>	Hand-pull seedlings or spray (G 1:100 + LI700®); cut, scrape and paint saplings (G 1:1.5); frill or spear trees (G 1:1.5). Best time for treatment early summer or when actively growing.
Edible Passionfruit	<i>Passiflora edulis</i>	- Handpulling, Cut Scrape and Paint with 1:1 glyphosate. - Spraying of seedlings with 1:100 glyphosate + surfactant (note: spraying is not the most effective control as waxy leaves prevent herbicide uptake).

Target Weed		Recommended Techniques
Common Name	Botanical Name	
Exotic Clerodendron	<i>Clerodendron</i> sp.	- Roll up long runners CSP (G 1:1.5). - Spray (G 1:100 + surfactant). - Stem: Scrape and paint (G 1:1.5).
Fireweed	<i>Senecio madagascariensis</i>	- Hand pull and bag and dispose of appropriately. - Flowering plants can be spot sprayed with herbicides containing aminopyralid or metsulfuron-methyl. The best time to treat fireweed with herbicide is late autumn.
Fishbone Fern	<i>Nephrolepis cordifolia</i>	Spraying of seedlings with 1:50 glyphosate + Brushoff ® mix (1.5g/10L) and Protec®.
Fleabane	<i>Conyza</i> sp.	Spray: (G + surfactant).
Giant Devil's Thorn	<i>Solanum chrysotrichum</i>	- Seedling: Hand-pull / spray (G 1:100 + surfactant). - Stems: <100mm CSP (G 1:1.5) >100mm frill or inject (G 1:1.5 2ml/cut).
Glory Lily	<i>Gloriosa superba</i>	- Control prior to fruiting; 2 sprays required; - First in December using 1:50 glyphosate and 1 g/10 litres Brushoff® with 1% pulse. - Second in February as above. - Ongoing monitoring and treatment required to achieve eradication.
Happy Plant	<i>Dracaena</i> sp.	Cut and paint (G 1:1.5); Cut, scrape and paint (G 1:1.5); Spray (G 1:100 + surfactant).
Inkweed	<i>Phytolacca octandra</i>	Manual removal with mattock or Spray: (G 1:100 + surfactant).
Lantana	<i>Lantana camara</i>	- Hand pull/brushhook. - Spray: (G 1:100 +surfactant) or splatter gun (G 1:9). - Stem: CSP (G 1:1).
Lemon-scented Teatree	<i>Leptospermum petersonii</i>	Grub out with bulldozer
Madeira Vine	<i>Anredera cordifolia</i>	- Spray: ground infestation (G 1:50 + Pulse®). - Stem: scrape as much stem as possible (inner part of vine on one side only) and paint (G neat).

Target Weed		Recommended Techniques
Common Name	Botanical Name	
		Tubers: scrape/gouge and paint (G neat). Bag any tubers or small hand-weeded vines and remove from site or compost under black plastic.
Molasses Grass	<i>Melinis minutiflora</i>	Spray: (G 1:100 + surfactant).
Monstera	<i>Monstera deliciosa</i>	Mattock out and remove from site or Overspray Spray: (G 1:100 + Brushoff ® mix (1.5g/10L)
Morning Glory	<i>Ipomoea purpurea</i>	Roll up long runners and hang up to dry; scrape and paint (G 1:1.5); spray (G 1:100 + surfactant).
Moth Vine	<i>Araujia sericiflora</i>	Spray: (G 1:100 + surfactant). Hand pull seedlings. Cut and paint (G 1:1.5) large stems.
Mother-in-law's Tongue	<i>Sansevieria trifasciata</i>	- Hand removal of all plants where possible. - Spray plantlets with glyph. 1:50 with Brushoff® 1.5 g/10l and Protec®.
Ochna	<i>Ochna serrulata</i>	- Seedlings: Spray (G 1:50 + MM 1-1.5g/10L + surfactant) - Stems: <100mm CSP >100mm frill or inject (G 1:1.5 + MM 1g/L]. Best treatment in late spring.
Paddy's Lucerne	<i>Sida rhombifolia</i>	Spray: (G 1:100 + surfactant).
Pampas Grass	<i>Cortaderia jubata</i>	Spray: (G 1:100 + surfactant) for plants <1m, or use a higher rate (e.g. 1:77) for larger plants. Spray before flowering.
Para Grass	<i>Brachiaria mutica</i>	Spray: (G 1:77 + surfactant) or hand remove (crown out)
Paspalum	<i>Paspalum</i> sp.	Spray (G 1:100 + surfactant).
Perennial Soybean	<i>Neonotonia wightii</i>	Cut and paint (G 1:1.5); Cut, scrape and paint (G 1:1.5); Spray (G 1:100 + surfactant).
Pigeon Grass	<i>Setaria sphacelata</i>	Spray: (G 1:100 + surfactant).
Poor Man's Orchid	<i>Epidendrum</i> sp.	- Hand pull, bag and remove. - Spray: 1:50 glyphosate + 1.5 g Associate®:10 L of water + surfactant (e.g. Pulse®) + dye.
Redhead Cotton Bush	<i>Asclepias curassavica</i>	Hand-pull; spray (G 1:100 + surfactant).
Red Natal Grass	<i>Melinis repens</i>	Spray: (G 1:100 + surfactant).
Rhodes Grass	<i>Chloris gayana</i>	Spray: (G 1:100 + surfactant).

Target Weed		Recommended Techniques
Common Name	Botanical Name	
Scotch Thistle	<i>Onopordum acanthium</i>	Spray: (G 1:100 + surfactant).
Scrobic	<i>Paspalum scrobiculatum</i>	Spray: (G 1:100 + surfactant).
Slash Pine	<i>Pinus elliottii</i>	Stem injection of trees with glyphosate (using axe or drill) at 1:1.5 or slash.
Siratro	<i>Macroptilium atropurpureum</i>	- Spray: (G 1:50 + MM 1-2gm/10L + surfactant). - Stem: CSP (G 1:1).
Small-leaved Privet	<i>Ligustrum sinense</i>	Seedlings: hand-pull or spray (G 1:50 + surfactant or G 1:50 + MM 1.5gms/10L + wetting agent or MM 1-2gms/10L + wetting agent); Saplings: CS&P or C&P (1:1.5); Trees: F/I (1:1.5).
Thickhead	<i>Crassocephalum crepidioides</i>	- Spray: (G 1:50 + MM 1-2gm/10L + surfactant). - Stem: CSP (G 1:1).
Umbrella Tree	<i>Schefflera actinophylla</i>	- Seedlings: hand-pull/spray (G 1:50 + surfactant or G 1:50 + MM 1-2gms/10L + Ag 2ml/10L) - Stem: <100mm CSP >100mm frill or inject (G 1:1.5). Best treatment in late spring.
Whiskey Grass	<i>Andropogon virginicus</i>	Spray: (G 1:100 + surfactant).
White Passionfruit	<i>Passiflora subpeltata</i>	- Handpulling, Cut Scrape and Paint with 1:1 glyphosate. - Spraying of seedlings with 1:100 glyphosate + surfactant (note: spraying is not the most effective control as waxy leaves prevent herbicide uptake).
Wild Tobacco	<i>Solanum mauritianum</i>	- Spray: Hand pull/spray (G 1:100 + surfactant). - Stem: CSP (G 1:1).
Winter Senna	<i>Senna pendula</i> var. <i>glabrata</i>	- Seedlings: hand-pull/spray (G 1:100 + surfactant) - Stem: <100mm CSP >100mm frill or inject (G 1:1.5). Best time for treatment early summer or when actively growing.

APPENDIX 4 - WEED CONTROL METHODS

Weed Control Method	Technique
Bagging	Plants which can reproduce from plant material such as bulbs, tubers, corms, runners (stolons), underground horizontal stems (rhizomes), and plantlets formed on leaves should be bagged and removed from the site. Bagged plant material can be composted, burned or disposed in a landfill. Compost piles should be well anchored and positioned away from the flooding zone and from cattle. Compost piles should be appropriately monitored. Any burning should be undertaken away from the riparian zone and from native vegetation.
Basal bark treatment	Used for saplings up to approximately 75 mm in diameter. The entire surface of the stem is treated from ground level to about 300 mm above the ground. Herbicide can be applied by brush or by spraying with a low pressure setting.
Cut	The cut stump method must involve completely cutting the trunk or stem of the plant, at a level below the first branches or as near as practicable to ground level. Follow up maintenance (on an annual or bi-annual basis) to suppress regrowth, suckering and coppicing is essential.
Cut, scrape and paint	The cut, scrape and paint method must involve completely cutting the trunk or stem of the plant, at a level below the first branches or as near as practicable to ground level. Herbicide must then be immediately applied to the cut surface of the cut trunk or stem. Following the cut and paint, the exposed stem or root surface is scraped till a light green coloured layer is visible. Herbicide is then immediately applied to the scraped surfaces.
Debris management	In the case of non-locally indigenous plants species that reproduce or regenerate vegetatively, debris should be managed in a manner to ensure complete death and should not be stacked and burned within 20 m of remaining native vegetation.
Hand held foliar spraying	Foliar spraying involves spraying the foliage of the plant with an appropriate herbicide. Herbicide should be applied with a low-pressure concentrated spray stream sufficient to avoid misting and spray drift. Foliar spraying should only be used on plants that have a total height of 1.5 m or less. In the case of deciduous plants, foliar spraying should only be undertaken when foliage is present on the target weeds and before yellowing and leaf fall commences. Foliar spraying should only be undertaken in a manner that does not cause harm to any adjacent native vegetation. Any native vegetation within one metre of the target plant must be adequately protected from direct spray, splash or drift. Foliar spraying must not occur over any water body (whether still or flowing) or in any manner which may result in direct or indirect application to a water body. Foliar spraying must only be carried out in calm conditions and must avoid spray drift.

Weed Control Method	Technique
Hand pulling	Hand pulling must involve gripping and pulling the stem of the plant by hand to carefully remove the whole stem and root system from the ground. Hand pulling should only be used for plants that can be removed with minimal disturbance to the soil and existing litter or vegetative groundcover. Hand pulling is most effective when the plants to be removed are small and the soil is moist.
Herbicide use	All use of herbicide involved in the carrying out of clearing activities must comply with: • The directions on the attached labelling; or • The National Registration Authority “North Coast Off-label Permit”, or NRA permit PER3512 covering methods listed in the Appendix to Common Weeds of Northern NSW Rainforests published by the Big Scrub Rainforest Landcare Group. Any mixing of herbicide must be carried out at least 20 metres away from any watercourse and used herbicide containers must be disposed of in an appropriate manner. All use of herbicide must be undertaken with regard to the provisions of the <i>Protection of the Environment Operations Act (1997)</i>. If a risk of pollution exists, a licence may be required from the Environment Protection Authority before work commences. Herbicide clearing methods must only be undertaken, or actively supervised, by a person or persons who have training and accreditation in the safe use and handling of chemicals. Herbicide clearing methods should only be used whilst the target plants are actively growing
Ringbarking	Ringbarking must involve the placing of a continuous sharp cut line (frill) around the entire trunk, to a depth below the sap flow zone, generally using an axe or tomahawk.

Weed Control Method	Technique
Scrape and paint	The scrape/gouge and paint, method is used for vine weeds with tubers such as Madeira vine (<i>Anredera cordifolia</i>). Sections of stem at least 300 mm long are scraped firmly, exposing the fibres of the stem, and the scraped sections are painted with herbicide (for Madeira vine, 75% Glyphosate is used). The stems must not be severed. Gouging may also be used in the case of plants with fleshy tubers. Gouging is like 'eying' a potato except that a deeper well is gouged with the tip of a knife and then filled with herbicide.
Stem injection - frilling, drilling, spearing	A series of drill-holes or cuts must be made into the sapwood around the trunk below the branches of the plant. Herbicide must then be immediately injected into each hole or cut at the recommended dosage. Holes and cuts must be angled downwards into the trunk to prevent herbicide escape. Stem injection must not be undertaken immediately before or after rain. In the case of deciduous plants, stem injection must be undertaken during late summer to early autumn. Plants that have been stem injected should be left in place undisturbed for a minimum of 12 months after herbicide application.
Vine removal	Where the vines are generally prostrate on the ground, aerial parts of the vine (stems and leaves) should be rolled into heaps then cut and paint or hand pulling applied. Where the vines are hanging from trees then cut and paint or hand pulling applied. Hand pulling of Madeira vine, Cape ovy and Climbing cactus must be avoided.

APPENDIX 5 - REHABILITATION AREA SELECTION CRITERIA

It should be noted that as part of the reconciliation of Commonwealth and State conditions, the exhibition process and the subsequent assessment of submissions, a number of supplementary recommendations from DoPE, BCD and TSC have been incorporated into the rehabilitation area selection process.

Previous versions of the Precincts 12 - 14 VWMP (Landpartners 2009, JWA 2012) referred to numerous identified “work areas”. However, the methodology utilised in the selection and confirmation of current rehabilitation areas involved a tiered or “top-down” approach, which, essentially means starting with the big picture and working down to the finer detail.

A summary of each major step in the process is described below. Each step often involved review and amendments to vegetation and/or habitat mapping:

- Step One - An initial assessment/review of pre-clearing vegetation types (Terrestria 2014) across all of the EMAs was completed. The New South Wales VIS database was interrogated to determine the appropriate PCTs which equated to the pre-clearing vegetation types. The Tweed Vegetation Management Strategy (Kingston *et al.* 2004) was also reviewed to determine appropriate corresponding vegetation codes.
- Step Two - Areas of EMAs committed to other uses were then filtered out of the candidate rehabilitation areas. The areas filtered out were:
 - Retained koala habitat - to be protected and enhanced in accordance with the KPoM (JWA 2019).
 - Retained WSF habitat - to be protected and enhanced in accordance with the WSFMP (JWA 2020a).
 - Compensatory koala habitat (JWA 2019) - avoided/no overlaps in accordance with MP08_0194 (MOD 4) Condition 41.
 - Compensatory WSF habitat (JWA 2020a) - avoided/no overlaps in accordance with MP08_0194 (MOD 4) Condition 41.
- Step Three - Small areas (<1,000 m²) isolated from any other similar compensatory or retained habitat area were excluded (as requested by BCD during the exhibition and submission phases in 2017/2018 and also by the EPBC Approval of 2015).
- Step Four - Each of the remaining rehabilitation areas were allocated to a relevant PCT. Vegetation to be rehabilitated on the Kings Forest site needs to be consistent with NSW BCD standards to allow comparison with relevant vegetation descriptions and their benchmarks. In this regard, the PCT benchmark descriptions were accessed via the NSW BCD database (i.e. the BioNet Vegetation Classification System) to determine appropriate PCT descriptions for each proposed rehabilitation area. It is noted however that PCT descriptions are still undergoing revision, and many remain undescribed for the IBRA subregion and therefore corresponding Tweed Vegetation Management Strategy 2004 (TVMS) codes have also been provided.

- Step Five - A final filter was applied in the process whereby any small, thin or irregularly shaped polygons of a particular habitat type were merged with adjacent vegetation types to create larger, more intact, and more manageable habitat areas.

APPENDIX 6 - BASELINE DATA PROFORMA

Work Area Number:	Date:
Climatic Condition:	
Vegetation type: ☐ Rainforest ☐ Sclerophyll Forest ☐ Wetland ☐ Woodland ☐ Heath ☐ Riparian Veg	
Native Regeneration Scoring at Time of Assessment: ☐ Negligible ☐ Poor ☐ Moderate ☐ Good ☐ Exceptional	

NATIVE PLANT SPECIES LIST			
<i>Details of native plant species present and their abundance within the work area</i>			
Stratum	Native Plants		Abundance
	Common Name	Scientific Name	
Lower			
Mid			
Upper			

THREATENED PLANT SPECIES/ENDANGERED ECOLOGICAL COMMUNITIES LIST		
<i>List of threatened plant species/Endangered Ecological Communities found at the work area</i>		
Species and Conservation Status	Number of Plants	Management Implications
Endangered Ecological Community		Management Implications

HABITAT FEATURES	
Fauna observed: <i>e.g. Turkey mound present on site.</i>	
Fauna habitat features present on site: ☐ Hollows in trees ☐ Mature or over-mature trees ☐ Dead standing trees ☐ Rocks and boulders ☐ Fallen logs ☐ Caves, mineshafts or overhangs ☐ Springs ☐ Lagoons ☐ Pools ☐ Watercourses / gullies ☐ Riparian areas ☐ Wet or damp areas (including soaks / springs) ☐ Leaf litter ☐ Native grasses, rushes and sedges ☐ Fleshy fruited trees and shrubs ☐ Nectar bearing trees and shrubs ☐ Dense understorey shrubs ☐ Prickly understorey shrubs ☐ Seasonal cracks in the soil ☐ Other (please specify):	
Comments:	

ENVIRONMENTAL WEED SPECIES LIST			
<i>Details of weed species present and their abundance within the work area</i>			
Stratum	Major Environmental Weeds		Percentage Cover %
	Common Name	Scientific Name	
Lower			
Mid			
Upper			

OTHER THREATS OR IMPACTS			
Feral Animal Presence:	Area of Most Disturbance	Impact	Management Implications
<i>EXAMPLE: Cane Toad</i>	<i>Open disturbed area</i>	<i>On native fauna</i>	<i>Monitor presence</i>
Possible Negative Impacts	Impact	Management Implications	
<i>EXAMPLE: Stock intrusion</i>	<i>On regenerating native plants</i>	<i>Stock intrusion is unlikely, however if evidence of significant negative impact of regenerating native vegetation is detected, then fencing of stock may be required.</i>	
<i>EXAMPLE: Herbicide drift</i>	<i>On threatened XXXX plant and on native plants</i>	<i>Use of herbicides to control weeds around the threatened plants will have to be done with utmost care and only by experienced bush regenerators. In any case weed control using herbicides must comply with current Best Management Practice</i>	

ENVIRONMENTAL RESTORATION ISSUES	
Weaknesses	
<i>EXAMPLES: Exposed, no canopy, high light. Copious weed regeneration following disturbance. Sloping site difficult to work in. XXX threatened species present in abundance.</i>	
Strengths	
<i>EXAMPLES: Good seed source for native recruitment. Some native regeneration occurring.</i>	
Restoration Objectives for Work Area	
<i>EXAMPLE: To undertake all enhancement plantings and the first stage weed control program by the release of the subdivision certificate, and to achieve an 80% native species canopy cover in all areas by November 2009.</i>	

APPENDIX 7 - DAILY WORK RECORD PROFORMAS

This form is to be filled by the team leader for each workday. The team leader will need to allow 15 minutes each day to gather any relevant information for team members and to fill in this form.

Name of Team Leader:		Date:		
Vegetation Type:		Site Number:		
Weather Conditions:				
Specific Work Zone/s:				
Work Team Details				
Name	Zone No	Time Started	Time Finished	Hours Worked
Total No of Workers:		Total No of Hours:		

Description of Work Undertaken (e.g. spraying, hand weeding, replanting, etc.). Mark work progress on project map.							
Weed Control Undertaken	Weed Species	Material Used (tools/machinery)	Chemical Application (type/ratio/volume)	Zone No(s)	Area Worked (m ²)	No of People	Total Hours Worked
Spraying							
Tree injections							
Cut and paint							
Hand weeding							
Other (specify)							
Replanting Undertaken	Material Used (tools/machinery)	Fertilizer, Mulch, Tree Protection Used (type/ratio/volume)	Zone No(s)	No trees Planted	No of People	Total Hours Worked	
Fencing Undertaken	Type of Fence	Material Used (tools/machinery)	Zone No(s)	Km of Fence	No of People	Total Hours Worked	
Other Work (describe activity)	Material Used (tools/machinery)	Zone No(s)	Quantity	No of People	Total Hours Worked		

Observations:

New native species or native species not previously recorded in work zone (please note date and zone no):

Name and date of any native plant species in flower or fruit, sudden and abundant regeneration of a particular species, or other relevant observations:

New weed species or weed species not previously recorded in work zone (please note date and zone no):

Any animal sightings (please indicate if by visual identification, called, nests, footprints, scats, clawmarks, shed skin, diggings, smell, feeding etc.):

Blank Project Map:

Use map to indicate work undertaken for each day (e.g. hatching weed control progress).

Signature:

Chemical Operators Data Sheet

This form is to be filled by the team leader for each workday. The team leader will need to allow 15 minutes each day to gather any relevant information for team members and to fill in this form.

Location:	Date:	Time:
Operators:		

Herbicide	Batch No	Dilution Rate	Total	Operator	Equipment
Glyphosate:					
☐ RoundupBioactive®					
☐ Weedmaster Duo®					
Metsulfuron Methyl:					
☐ Brushkiller®					
☐ Brushoff®					
Glyphosate PLUS Metsulfuron Methyl:					
☐ RoundupBioactive®					
☐ Weedmaster Duo®					
☐ Brushoff®					
Triclopyr & Picloram:					
☐ Gazon®					
☐ Tordon T/C®					
Marker Dye:					
☐ White field marker					
☐ Red marker					
☐ Other					
Additive:					
☐ LI 700®					
☐ Agral®					
Other:					

Growing Conditions	Temperature	Weather Conditions	Wind Strength	Wind Direction
☐ Very Good	☐ Cool <20°	☐ Showers	☐ Strong	
☐ Good	☐ Warm 21° - 25°	☐ Overcast	☐ Gusty	
☐ Poor	☐ V/Warm 26° - 30°	☐ Clear Sky	☐ Light	
☐ Very Poor	☐ Hot >30°	☐ Variable	☐ Calm	

Zone/Area:
Comments:

Signature:
